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Wins Award for Outstanding Service
To Natural Gasoline Industry

NATIONAL PETROLEUM NEWS

MAY 17, 1939

PROFITS GO UP
COSTS GO DOWN
with Tokheims on your islands
TOKHEIM
MODEL 39
PROFITS GO UP and costs go down with Tokheims on your islands. For new Tokheims boost volume by marking a station as modern—by giving the up-to-the-minute service keen buyers have come to demand—by increasing gallons per customer. And believe it or not, costs tend downward when Tokheims go in, because operation expense is usually reduced and maintenance costs are practically eliminated. This year, get your share of the rising volume. Install new Tokheims now.
Illustrated is Model 39 Computer. Also available in Clock Dial and Stationliter types.
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TOKHEIM
COMPARE THE VALUE
THE PUMP THAT COUNTS
Counts Dollars and Cents
Counts Gallons and Fractions
COUNTS MOST IN PROFITS AND UPKEEP SAVINGS
TOKHEIM OIL TANK & PUMP CO.
DESIGNERS AND BUILDERS OF SUPERIOR EQUIPMENT
FORT WAYNE
FOR 38 YEARS
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ENDS HIGH UPKEEP!

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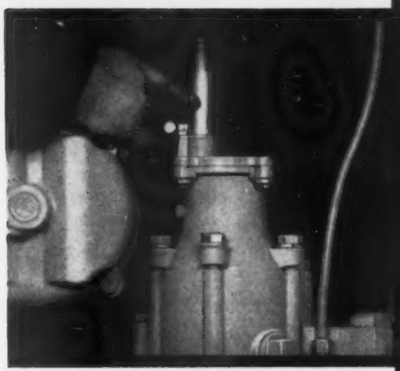
ONE KNOB PRICE-SETTER:—Price can be changed with one hand.



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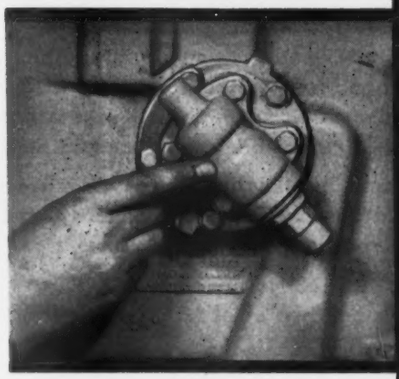
AQUA PACKLESS PUMP:—No packing, no mechanical seal. Leakproof. Outboard bearing. Silent gear operation.



AQUA PUMP PRESSURE CONTROL UNIT:—Located *outside* Aqua Compact, may be quickly removed for easy cleaning.

BONDERIZING TREATMENT:—Where Aqua super-finish starts. Prepares panel surface for baked enamel coats.

BEAUTY — that

- ***commands business***
- ***builds confidence***
- ***moves your station out in front***

Protected against damage from dirt and water by skill in design and choice of materials, easy to clean when necessary, Aqua Pumps *urge* comparison in every significant detail.

The Aqua Compact Exchange Plan *ends* high upkeep. Ask us about it.

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HE MODERN COMPUTING-METER PUMP AT ITS BEST!

George P. Bunn

The same year the Natural Gasoline Ass'n of America was formed —in 1921 that was—Engineer George P. Bunn went to work for the Phillips Petroleum Co.

The association at its eighteenth annual convention recently elected, as its tenth president, Manager George P. Bunn of the natural gas and gasoline department of the Phillips company.

A native of Jackson County, Ohio, Bunn attended schools there and then went to the University of Kansas where he received his Bachelor of Science degree in mechanical engineering. While in school he was student instructor in descriptive geometry.

Bunn has kept so thoroughly abreast of the rapidly changing natural gasoline industry's picture that he is recognized for his thorough knowledge of every phase from policy to technology of the business.

He has two chief hobbies—golf, and getting the job done.

National Petroleum News

VOLUME 31 WEDNESDAY, MAY 17, 1939 NUMBER 20

Oil Men Crowd A P I Meeting In New Orleans

By Telegraph
By V. B. GUTHRIE, Managing Editor

NEW ORLEANS, May 15.—Great advances in the technique of producing, refining and testing oils will be reported here this week at the ninth annual mid-year meeting of the American Petroleum Institute. But for the marketing branch of the oil industry, the only topic on the program is a discussion on how to improve its public relations, at a group session May 18. Nearly 600 registered today and it is thought total attendance will reach 1000.

Meeting at a point where the taxes on gasoline are the highest of any point in the country and exceed the tank wagon price by 0.75 cent a gallon, the industry's representatives were to be warned by Chester H. Gray, Washington, director of the National Highway Users Conference that perpetuation of our present highway system depends on not piling on the taxes on motor vehicles until they become "confiscatory" on the incomes of individual users of the highways.

Results of road and laboratory tests recently completed at Yale University, comparing gasoline and alcohol-gasoline blends as motor fuel, are to be announced May 18 by Prof. L. C. Lichty and C. W. Phelps of Yale faculty. They will show that between 0.5 and 1 cubic centimeter of tetraethyl lead—15 to 30 drops—produces the same anti-knock effect as 10 per cent of alcohol, which, if made from farm crops, costs 2.5 to 3.5 cents more a gallon than gasoline containing lead. Use of 10 per cent alcohol blends in modern automotive engines shows a marked decrease in mileage at high speeds, these tests show.

J. B. MacAuley Jr., of Detroit, Chrysler Corp., is to present a paper making the conclusion, as a result of extensive road tests, that in current cars the utilization of "higher octane fuels is poor," that an increase in octane number of 15 to 20 produced only a 5 per cent in-

(*Continued on page* 20)

Oh No, It's Not Because They Sell Eye Glasses

N. P. N. News Bureau

WASHINGTON, May 15.—Here is a story which might have been expected.

The American Optometric Assn. has urged all its members to support the Truman bill requiring, among other things, that all interstate operators of private automobiles have their eyes examined.

Dr. Edwin H. Silver, chairman of the Motor Vision Commission of the association, said that in the 11 states and the District of Columbia where such eyesight standards are required, accident toll is 25 per cent lower than elsewhere.

Bill already has passed Senate.

Illinois Grand Jury To Pry Madison Lid

By Teletype
N. P. N. News Bureau

WASHINGTON, May 16.—Declaring it has evidence indicating that practices complained of in the Madison oil indictments of late 1936 "have not been wholly abandoned in the oil industry," the anti-trust division today announced it has issued subpoenas for another Grand Jury investigation of oil company practices in the same 10 midwestern states covered by the earlier indictments.

The subpoenas are returnable June 5, and subsequently, before the Grand Jury in the U. S. District Court for the eastern district of Illinois, presided over by Judge Walter C. Lindley. Judge Lindley was named by the 7th Circuit Court of Appeals to continue trial of the Madison Cases.

Although no definite statement as to the nature of complaints which have led to the Grand Jury probe came from the Justice Department, it is understood they cover margins to jobbers (which were involved in the "second" Madison Case), as well as "artificial" maintenance of gasoline prices.

Even before the announcement was made by Attorney-General Murphy and Anti-Trust Chief Arnold here today, there were rumors in the Midwest, and particularly around Chicago, where arguments are being heard on appeal of defendants in the 'first" Madison Case, that another Grand Jury proceeding was in the offing.

The Grand Jury probe was described as a "fishing expedition" by some oil men at Chicago, according to reports reaching here.

In this connection, Arnold's announcement described the probe as a "test" of the accuracy of the information given by complainants themselves as well as those complained against, and as a "protection to possible offenders rather than a weapon against them."

The announcement says the investigation further seeks to "compel" the defendants in the "second" case, who pleaded *nolo contendere*, to reveal the facts of the matters complained of in their earlier indictment. Since they were not compelled to testify before the Grand Jury which indicted them, claiming their lawful privilege against self-incrimination, and pleaded *nolo contendere* to the indictment, the "facts" have not been brought out in their own testimony, and, to quote from Arnold's statement, "they can now safely be accorded immuni-

Ickes Boosted toward Goal Of New Conservation Unit

N. P. N. News Bureau

WASHINGTON, May 15.—Transfer of the National Bituminous Coal Commission to the Interior Department, under President Roosevelt's governmental reorganization plan, has revived reports that Interior Secretary Ickes again is seeking to head up an agency which would ultimately control all natural-resource industries, including Oil.

Several years ago Ickes backed a bill in Congress to change the name of his department to "Department of Conservation," but it failed to pass. Now, observers see in the Coal Commission transfer the first step in a new move to accomplish Ickes' ambition. His advocacy of federal control for the oil industry is well known. Next step might be to consolidate all agencies having to do with Oil in the Interior Department.

Indeed, reliable sources reported, even before the executive order came out abolishing the Coal Commission as an independent agency, that Ickes was having drafted—or had already done so—a bill to consolidate the "oily" divisions within his department into an over-all petroleum administrative body, which would be ready to step into the federal control picture as soon as the necessary legislation was passed.

Included in this consolidation would be the petroleum technical division of the Bureau of Mines, the Bureau's Petroleum Economics Division, the petroleum conservation division, now under Ickes, headed by George W. Holland, and the branches of the U. S. Geological Survey concerned with oil discovery and production.

Some reports even go so far as to say the petroleum section of the Bureau of Foreign and Domestic Commerce in Commerce Department, which gathers and disseminates statistics on oil activity in all parts of the world, might be shifted to Ickes' department.

The Natural Resources Committee report, sent to Congress earlier this year, dwelt on the need for federal control of natural resources and the new legislation is expected to be based upon data from this report. Ickes is chairman of the National Resources Committee.

ty from any further prosecution based on such disclosures as they may now make."

Thus it appears the subpoenas which have gone out from Washington will probably go to some individuals and corporations which were defendants in both former cases—first to the defendants in the second case who pleaded *nolo contendere* and second to the companies and individuals charged with "artificial" maintenance of gasoline prices, in the "first" case which involved a "buying program." Because of the "double jeopardy" provision of the Constitution, however, these latter could not be held accountable again for the alleged anti-trust law violations named in the original indictment, and for which they have stood trial. It is understood that quite a large number of subpoenas went out, although the exact number could not be learned.

Timing of this new Grand Jury move has observers here guessing. There are still pending a lot of "loose ends" of the original Madison cases, and in addition, many of the companies expected to be called in the Danville Grand Jury probe are now preparing data for presentation to the Temporary National Economic Committee.

However, it may be that the Danville Grand Jury probe may be over by the time the TNEC's oil investigation begins.

Meanwhile, the Justice Department is continuing its preliminary investigations of complaints against companies marketing oil along the eastern seaboard, although it is understood no decision has been made as to whether this will result in a Grand Jury probe.

Complete text of the Murphy-Arnold announcement of the Danville Grand Jury proceeding follows:

Department of Justice Statement

Text of Statement

"A further investigation of practices by the major oil companies in the ten states of the middle west to ascertain whether such practices constitute violations of the anti-trust laws has been instituted by the Department of Justice. The attorney general has authorized a proceeding before the regular grand jury for the eastern district of Illinois, convened at Danville, Ill. Subpoenas for the appearance of witnesses before this grand jury have been issued and are being served and are returnable June 5, 1939, and subsequently.

"There are two principal reasons for this action:

"(1) The department is in the possession of evidence indicating that many of the practices complained of in the indictments against the major oil companies returned at Madison, Wis., in 1936 have not been wholly abandoned in the oil industry. There is reason to believe that the price levels for gasoline in this area have continued to a large extent to be artificially maintained and that many of the terms under which gasoline jobbers are permitted to do business with the major oil companies remain rigid and unrestricted. An explanation of these later conditions will be sought in the present investigation.

"(2) The department desires to obtain evidence from those persons who were convicted and paid fines in 1937 upon pleas of *nolo contendere* in the case of *United States v. Socony-Vacuum Oil Co., Inc., et al.* The grand jury at Madison, Wis., which returned the 1936 indictments still pending against a number of the defendants did not in its investigation have the benefit of the testimony of those persons whom it made parties defendant. Nevertheless, those very persons, being active for their respective companies in the conduct of the matters complained of in the indictments, are in the best positions possible to know accurately all the facts relating to the matters complained of. For the Madison grand jury to have summoned these persons to throw light upon the investigation it was then conducting would have resulted in providing them with immunity from prosecution. Many of them indicated that they would claim their lawful privileges against self-incrimination and would furnish information in their possession only in return for immunity, which the government, in view of the circumstances and the apparent gravity of the offenses, did not then feel free to grant. Now, since these persons have entered pleas and paid fines and may not under the law be prosecuted again for the same transactions, the grand jury at Danville is in the position to compel them to disclose all the facts within their knowledge relating to these questions. They can now safely be accorded immunity from any further prosecution based on such disclosures as they may now make.

"In announcing this grand jury investigation the Department of Justice desires to make it clear that its function is to uncover completely the relevant facts and to test the prima facie case of violation of the Sherman Act by evidence under oath. This is a protection to possible offenders rather than a weapon against them. It is a means of testing the accuracy of information given by complainants themselves as well as those complained against. It is a safeguard against prosecutions brought on information which will not stand the test of investigation under oath. Therefore, the calling of the grand jury should not be considered as an implication of guilt on the part of any of the persons subpoenaed. The grand jury investigation is used not for the purpose of presenting the minimum evidence necessary to obtain an indictment but to investigate all of the facts."

Thurman Arnold
Assistant Attorney General

Approved:
Frank Murphy
Atty. General

June 26 May Be Oil's Date With O'Mahoney

WASHINGTON, May 15.—June 26 has been tentatively set for opening of the oil industry investigation before the Temporary National Economic Committee, it was learned today. However, the date, it was pointed out, is only tentative, and may be set back still further.

BULLETINS

Oil Companies Back New California Oil Bill

LOS ANGELES—A group of probably 20 to 30 large independent California oil producers, who favor the Wagy Prorate Plan will appear before the legislative committee hearing at Sacramento May 18. It was indicated that the Wagy bill will receive the open support of the major producing companies also. Opponents charge that the bill is another "Sharkey Bill" (a proration law which previously had been defeated by a referendum).

West Coast Oil Men Return Home

WASHINGTON—West Coast oil officials who were in Washington last week conferring with Commerce Department and other government officials concerning the Justice Department's announcement of a Grand Jury probe of oil company practices in that area (NPN, May 19, page 9) have returned home. No statements were obtainable either from the oil men or from the officials with whom they conferred.

U. S. Crude Output Drops 172,400 Barrels

By Teletype
N. P. N. News Bureau

NEW YORK, May 16.—Crude oil production in the U. S. averaged 3,402,500 barrels daily in the week ended May 13, down 172,400 barrels from previous week, report of American Petroleum Institute today showed. Texas daily output, with Saturday and Sunday shutdowns, dropped 201,000 barrels. Illinois increased 9700 barrels to new high of 209,900 barrels daily. See page 24 for detailed figures.

Appellate Court Gets Madison Case

CHICAGO—U. S. Circuit Court has taken under advisement appeals of 5 individuals and 12 major companies convicted in first Madison Oil Case following close here today of eight hours of arguments.

Government Counsel Weston argued that evidence was ample for sending case to the jury. Grant W. Kelleher closed government's case contending "appellants failed to show any prejudice" in government's use of Grand Jury testimony.

Chief Defense Counsel Donovan concluded rebuttal argument for appellants, contending that case was not "price-fixing" but of exerting an influence on price.

Fragments of Madison Anti-Trust Cases Scattered through Many Courts of Land

N. P. N. News Bureau

WASHINGTON — The Grand Jury proceeding to begin at Danville, Ill., June 5, is the second Grand Jury Action involving the oil industry which the Justice Department has announced in two weeks. The other was the West Coast Grand Jury investigation concerning the old consent decree (NPN May 3, page 5).

Other court actions concerning the industry now pending include the following, all stemming from the original Madison indictments include:

In U. S. Supreme Court, petition of the Justice Department for mandamus action against Judge Patrick T. Stone, Madison, to compel him to rescind orders dismissing 11 defendants following jury's verdict in first case.

In seventh Circuit Court of Appeals, Chicago, appeal of defendants convicted in first Madison Case. Now being argued.

In District Court at Madison before Judge Lindley, trial of defendants who did not plead *nolo contendere* to indictments in second Madison case. Trial set for Oct. 2. Same court and Judge, retrial of defendants granted new trials in the first case; scheduled to follow Oct. 2 trial.

Government Counsel Quizzed On Remarks in Madison Case

N. P. N. News Bureau

CHICAGO, May 15.—The first Madison oil case moved a step nearer final decision today as arguments began here on appeals of 17 defendants to set aside convictions.

Counsel for the appellants argued that the trial judge excluded evidence offered to show that federal oil administration officials encouraged and co-operated with defendants in their activities, and that government counsel made improper and prejudicial remarks in their jury summations and improper and prejudicial use of grand jury testimony of witnesses during the trial.

Government counsel had only a short time for argument before the recess; they will resume Tuesday.

Hearing the arguments, which were before the U. S. Circuit Court of Appeals were Judges William M. Sparks, J. Earl Major, and Otto Kerner. Each side was allotted four hours to make their arguments. Appearing for the appellants were Col. William J. Donovan, chief counsel, and H. H. Thomas, Madison, Wis., attorney. Appearing for the government were John Henry Lewin, Charles H. Weston, and Grant W. Kelleher, special assistants to the attorney-general.

The liveliest exchange between the bench and counsel came at the close of the first day's sessions over "improper" remarks by government counsel during jury summation.

Judge Major asked Lewin about the remark made by W. P. Crawford, of government counsel, about convictions being "the wish and desire of the highest officials in the government."

"Perhaps unfortunate" Lewin termed the remark, explaining that it really comes down to a statement saying that the attorney-general brought the case.

A few minutes later, Judge Major returned to the point, asking Lewin if the jury might not infer that the President of the United States was meant.

Col. Donovan contended that the government completely failed to establish that defendants had paid higher prices than jobbers, that there was no misrepresentation by the trade journals and that the prices they reported were jobber prices. After the government dismissed the trade publications "the case should have ended right there" Col. Donovan told the court, as these dismissals caused a complete legal change in the case.

Actions of the defendants, he said, "did not fix but influenced price made through natural, competitive forces."

Thomas argued two points, the improper and prejudicial grand jury testimony used by the government, and improper and prejudicial government arguments to the jury, charged by appellants.

"It is our contention this was a studied attempt to get grand jury testimony before the petit jury," Thomas said.

Donovan argued that activities of defendants was on a suggestion that majors buy distress gasoline, at a fair price, without a central buying agency, and without any allotted quantities to be purchased. Lewin, first to appear for the government, charged that a tank car committee met month after month, tank car prices were set and up went the market.

This arrangement, he charged, was "considered practical and better than previous programs," referring to government programs to raise tank car prices prior to the "conspiracy." Buying was left to a committee of three, he continued, asking, "does that sound like company buying?"

"Hot" oil, Lewin charged, was a problem before the buying program named in the indictment, and was completely wiped out before the program started.

The 17 appellants were fined by Judge Stone July 19, company fines were $5000 each and costs, and individuals $1000 each.

Individual appellants are Charles E. Arnott, New York, Socony-Vacuum Oil Co. vice-president; P. E. Lakin, St. Louis, Shell Oil Co. general manager; H. T. Ashton, St. Louis, manager of the Lubrite division of Socony-Vacuum; Robert W. McDowell, Tulsa, Mid-Continent Petroleum Corp. vice-president; and R. H. McElroy, Jr., Chicago, Pure Oil Co. tank car sales manager.

Corporate appellants are Socony-Vacuum Oil Co., Empire Oil & Refining Co., Pure Oil Co., Sinclair Refining Co., Phillips Petroleum Co., Globe Oil & Refining Co. of Illinois and of Oklahoma, Wadhams Oil Co., Continental Oil Co., Shell Petroleum Corp., Mid-Continent Petroleum Corp., and Skelly Oil Co.

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NPN's Log ON OIL LEGISLATION

Summarized oil legislative information below is based on reports received at Cleveland from Washington and state legislatures, which are deemed reliable although NATIONAL PETROLEUM NEWS assumes no responsibility for accuracy or completeness of this information

Congress

US H Res.-6162, *Smith, Washington.*

Prohibits use of U. S. funds for expenditures, grants or loans for purchase of materials not of domestic origin. Ways and Means Committee.

US H Res.-6206, *Disney, Oklahoma.*

Amends pipeline transportation tax (supersedes H. R. 5586) Ways and Means Committee.

US H Res.-6207, *Disney, Oklahoma.*

Exempts petroleum stills from registration under alcohol tax act. Ways and Means Committee.

US HB-2294, *Sheppard, Texas.*

Providing for protection and conservation of equities or rights accruing to the government because of railroad land grants. To Interstate Commerce Committee.

US HB 6228, *Keller, Illinois*

Providing for construction of nation-wide system of hard-surfaced roads. To Ways and Means Committee.

US SB 2341, *Bridges, New Hampshire*

Providing that officers of corporations not receiving compensation as such, are not "employes" for purposes of Social Security Act. To Finance Committee.

US SB 2398, *Walsh, Massachusetts*

To amend the Motor Carrier Act with respect to the power of Interstate Commerce Commission to limit scope of operations of certain carriers. To Interstate Commerce Committee.

★ ★ ★

State Legislatures

Bills Introduced

FLORIDA

HC Res.-9, *Johnson.*

Authorizing Road Department to investigate, and report to 1941 legislature, weights of various vehicles that may be operated over certain types of highways safely and a fair compensation each type of motor vehicle should pay for maintenance and construction of certain highways. To Resolutions Committee.

HB-1078, *West.*

Providing for conservation of crude petroleum, oil and natural gas, prohibiting waste thereof, and requiring notice to drill for same. To Phosphates, Oils, & Minerals Committee.

HB-887, *Allen.*

Providing for tax on mineral products taken from ground. To Finance and Taxation Committee.

SB-679, *Westbrook.*

Imposing tax of 7 cents per gallon on liquid fuel not already taxed, when used to propel motor vehicles over state highways or street. To Finance and Taxation Committee.

ILLINOIS

HB-999, *Garman.*

Creating an oil and gas conservation commission of 3 members to have jurisdiction over all matters relating to the conservation of oil and gas and all persons and property therewith connected, and to enforce regulations for conservation of oil and gas. To Speakers Table.

HB-1000, *Garman.*

Placing public transporters of oil and natural gas under jurisdiction of oil and gas commission created in HB-999. To Speakers Table.

HB-1007, *Warfield.*

Bans trucks from highways of state from noon Saturday to midnight Sunday from June 15 to September 15. To Committee on Motor Vehicles.

HB-1016, *Lawler.*

Prohibiting transportation of more than 2000 gallons of gasoline in one vehicle on public highways. To Speakers Table.

★ ★ ★

Changed Status

CONNECTICUT

SB-259. Regulating storage and transportation of inflammable liquids. Reported by substitute in Senate.

FLORIDA

SB-43. Repealing gross sales tax. To Finance and Taxation in House.

ILLINOIS

HB-66. Prohibits transporters from carrying more than 20 gallons of gasoline into state without paying gasoline tax. Favorably reported in Senate.

HB-515. Providing for grading, price posting and registration of dealers in gasoline. Favorably reported in House.

SB-27. Requiring pipeline operators to furnish bond. Favorably reported in Senate.

SB-255. Regulating storage, transportation and purchase of petroleum. Favorably reported in Senate.

SB-304. Continues 3 per cent sales tax to July 1, 1941. Favorably reported in Senate.

SB-305. Continues utility tax to July 1, 1941. Second reading in House.

SB-449. Requiring reports of oil sales. Favorably reported in Senate.

MASSACHUSETTS

HB-1201, 1621 *and* 1757. Deferring registration of motor vehicles to March 31. Killed in House.

HB-1507. Requiring motor fuel pumps to be plainly marked, showing octane rating, price, etc. Report filed for next annual session.

HB-1509. Restricting peddlers of fuel oils from peddling without permit or license in county where such sales are being made. Report filed for next annual session.

HB-1670. Prohibits use of misleading signs relating to price of motor fuel. Passed Senate.

NEW YORK

HB-2. Deferring motor vehicle registration to April 1. Amended in House.

HB-932. Exempting farm trailers and semi-trailers from registration. Reconsidered and restored to third reading in House.

HB-2307 *and* 2308. Continuing one cent emergency gasoline tax for one year. Favorably reported in Senate.

PENNSYLVANIA

HB-187. Providing for additional $1.00 fee for special license registration. Passed House.

HB-442. Appropriating $8,500,000 from motor license fund to Highway Department. Passed Senate.

HB-1245. Appropriating $11,570,914.55 from motor license fund to Board of Finance for Servicing of state debt. Favorably reported in Senate.

SB-156. Repeals act for prevention of forest fires on land on which oil and gas wells are situated. Passed Senate.

SB-153. Providing for transfer of funds from motor license fund to general funds of several state departments. Recommitted in Senate.

SOUTH CAROLINA

HB-339. Amended in committee to impose additional one cent per gallon tax on gasoline; revenue to go to state general fund. Also, provides for loan of $1,250,000 from highway department to state treasury. Amendments to be offered at third reading.

Final Reports

Colorado

(Legislature convened Jan. 4, adjourned April 24)

Bills Enacted

SB-278. Authorizes a county planning and zoning board to set up master plan for outdoor advertising for counties or regions for purpose of promoting health, safety, morals, welfare, lessening of congestion in the streets or roads, etc. Approved.

Bills Which Did Not Pass

HB-977. To impose a tax of 2 percent of value of services rendered or performed by any person in the business of conducting or performing transportation services of any nature.

HB-992. To impose an additional franchise tax upon corporations engaged in transporting oil by pipeline equal to 1 percent of gross receipts.

HB-149. To prohibit use of automatic or mechanical pumps or devices for purpose of measuring any liquid commodity unless such pumps or devices have been inspected and approved by proper authority.

HB-143. To provide that motor fuel shall be treated for its octane and energy rating. Inspection fee 1/20 cent per gallon. Distributing device would be labeled to show the octane rating.

HB-852, *SB*-492 *and* 495. To defer registration to April 1st.

HJ Res.-9. To require Highway Department to make an annual report to legislature showing proper charges to be made on each class of motor vehicle for use of highways.

HB-469. To repeal mileage tax and substitute a tax based on capacity.

HB-597. To prohibit transportation of gasoline, kerosine, fuel oil, etc., in excess of 2,000 gallons in any single vehicle, or vehicle and semi-trailer.

HB-963. To impose a tax on itinerant vendors. Petroleum industry is exempt if vending from an "established place of business".

SB-613. To amend act regulating shipment, possession, sale and use of inflammable liquids.

SB-345. To provide that state inspector of oils shall have general supervision of weights and measures, and weighing or measuring devices offered for sale in state.

SB-88. To provide a maximum day of 10 hours for truck drivers.

SB-639. To provide that 50 per cent of fines imposed for violations of motor vehicle act should be credited to State Highway Department. Remaining 50 per cent would go to general fund.

SB-642. To provide for compulsory inspection of motor vehicles by means of official inspection stations.

SB-9. An act to regulate the use and operation of steam boilers, steam engines, heating plants and air compressors.

SB-32. To provide minimum wage and maximum hour standards.

NOTE: A number of bills were introduced by title only and were never reported from committee. These bills are not covered by this report.

* * *

Iowa

(Convened Jan. 9—Adjourned April 26)

Bills Enacted

HB-114. Provides for a farm-to-market road program with funds from federal government and use of county allotments of motor fuel license taxes. Approved.

SB-427. Permits storage of motor fuel at refineries, marine or pipeline terminals without payment of motor fuel tax until shipment to ultimate distributor. Also amends present specifications of motor vehicle fuel to conform with U. S. specifications and redefines fuel oil. Approved.

SB-202. Provides no refund shall be paid on motor fuel purchased more than 60 days prior to filing of refund claim. Also prohibits dealers from preparing refund claims for purchasers. Approved.

SB-436. Prohibits voting of additional primary road bonds in any county which has previously authorized one or more of such bond issues. Approved.

SB-379. Creates department of public safety to enforce laws regulating motor vehicle carriers. Approved.

SB-48. Provides that state commerce commission shall negotiate and perfect reciprocal agreements among various states and Iowa. Approved.

SB-328. Prohibits waste in production of crude oil, petroleum or gas. Approved.

Bills Which Did Not Pass

HB-96. To provide that on and after January 1, 1940, all gasoline sold and used for motor fuel in Iowa must contain not less than 10% by volume of ethyl alcohol manufactured from products raised in state. If there is insufficient alcohol available for blending purposes, executive council is authorized to fix alcohol percentage.

HB-87. To provide that any county that shall use any motor fuel for county purposes in publicly owned trucks and tractors for any public purpose, except on construction work which must be advertised, and shall have paid tax, shall be entitled to a refund of such tax.

HB-140. To provide for refund of tax on motor fuel used in any equipment owned or operated by any tax levying or certifying body, governmental subdivision or branch thereof.

HB-231. To amend gasoline tax to allow refunds on farm tractors used for agricultural purposes, including moving of same on public highways from one field to another.

HB-346. To reduce license tax on gasoline pumps from $3 to $1 per year.

HB-277. To impose a tax of 5 cents per 1000 cu. ft. on all natural gas moving through pipelines. Transporting natural gas through pipelines is declared a public utility.

HB-67 *and SB*-17. To repeal existing chain store tax and to enact a new one in its place. No exemption for filling stations.

HB-587. To amend present chain store tax so as to exempt filling stations.

HB-34. To increase registration fees on trucks.

HB-263. To provide for regulation of common and contract carriers similar to federal motor carrier act. Registration fees are based on gross weight instead of, as now, on carrying capacity.

HB-601. To repeal ton-mile tax for common carriers and to levy a registration and weight tax on all carriers, including private carriers.

HB-113. To create a board of boiler rules which shall formulate rules and regulations for the safe construction, use and operation of boilers.

HB-597. Amends law relating to unfair discrimination in the purchase and sale of commodities.

H.J.R.-3 *and S.J.R.*-1. To enact a constitutional amendment prohibit-

ing diversion of motor vehicle license fees, registration fees, and other charges on account of the operation of motor vehicles, and all licenses and excise taxes on motor fuels.

S.C. Res.-7. To petition U. S. Congress to enact legislation to extend use of farm products in making of motor fuel.

SB-364. To provide that all gasoline must contain not less than 10% by volume of ethyl alcohol to be manufactured from products raised in Iowa.

SB-222. To repeal chain store tax act of 1935 and to enact chain store regulatory act of 1939. Prohibits sales below cost.

SB-456. To repeal present chain store tax and to enact a new one in its place. Would exempt persons selling petroleum products at retail from bulk storage plants or tank wagons incidental thereto, if retail sales of such products exceed 95% of total sales.

SB-373. To repeal present sales tax and to impose a new one in its place. Sales of gasoline exempt.

SB-82. To prohibit use of primary highways by commercial trucks between the hours of 7 A.M. and 12 midnight on Sundays and holidays.

SB-184. To prohibit the transportation of more than 1200 gallons of gasoline in any one conveyance except in cities where the limit would be 2000 gallons.

* * *

New Mexico

(Legislature convened Jan. 10—adjourned, March 11)

Bills Enacted

HB-76. Redefines the word "use" so as to include storage for gasoline tax purposes, amended to take care of existing gasoline stocks and refinery storage. Approved.

HB-248. Grants a flat allowance of 2% net taxable gallonage to cover evaporation, shrinkage and losses resulting from unknown causes, irrespective of actual amount thereof. Provides for a refund of tax paid on motor fuel destroyed by fire or accident while still in ownership or custody of wholesaler or distributor. Reduces tax rate upon users of petroleum products, other than motor fuel, for the generation of power to propel motor vehicles on the highways, from 7.5 cents per gallon to 5 cents. It is expressly provided that this tax shall apply to liquefied gases composed of propane, propylene, butane, butylene, and diesel fuel. Approved.

HB-249. Provides that any person wanting a refund shall obtain a permit to obtain refunds before buying fuel. Approved.

HB-254. Requires retail dealers to post on each pump or other dispensing equipment a sign stating price per gallon of motor fuel. All taxes shall be included in price so posted, and sign shall contain a statement of amount of taxes included, or, without specifying amount, a statement that taxes are included. Posted prices must remain in force 24 hours and sales below such price are prohibited as are sales below net cost to retail dealer plus all selling expenses. Prohibits misbranding and substitution. Approved.

HB-21. Extends reciprocity to non-resident agents or representatives traveling into state for sole purpose of supervising or consulting with local agents or representatives of business concern by whom they are employed. Approved.

HB-288. Provides for the issuance of $6,000,000 in highway debentures. Approved.

HB-174. Provides that oil and gas leases shall continue as long as oil or gas is being produced in commercial quantities. Approved.

SB-182. Provides for a use tax to supplement sales tax. Specifically exempts gasoline or motor fuel on which a tax for sale or use thereof is imposed. Approved.

SB-14. Provides for registration on March 1st instead of January 1st. Approved.

SB-116. Establishes a field division of state police to enforce port-of-entry and mileage tax laws. Approved.

SB-142. Appropriates for each of state's 28th and 29th fiscal years $15,000,000 or so much thereof as may be necessary for purposes of carrying out provisions of laws relating to issue, sale and payment of state Highway Debentures, and interest thereon, and for construction, maintenance and improvement of public highways under direction of State Highway Commission. Approved.

S.J.M.-5. Memoralizes Congress to pass H.R. 2622 extending certain oil and gas prospecting permits issued under the Federal Oil and Gas Leasing Act, and H.R. 2663 providing for issuance of oil and gas leases with reasonable and workable rental, royalty and bond provisions. Adopted.

SB-69. Authorizes the Department of Health to regulate containers for the storage and handling of liquefied gases. Approved.

SB-76. Provides for execution of an agreement to further extend Interstate Oil Compact for a period of 2 years from September 1, 1939. Approved.

SB-121. Provides that oil and gas leases of lands belonging to the State of New Mexico shall remain in full force and effect as long as oil and gas is produced in paying quantities. Approved.

Bills Which Did Not Pass

HB-71. To provide that commercial carriers as defined (private trucks transporting loads of more than 1,000 pounds and operating beyond a radius of 25 miles from an established place of business of their owner, excepting certain farm trucks) shall pay a filing fee of $5 and obtain a permit from the state. Such trucks to pay a mileage fee ranging from one quarter cent for 1½ tons or less, up to one and one half cents for each mile traveled by any vehicle having a capacity in excess of 5 tons. Trailers and semi-trailers are considered separate vehicles.

HB-142. To provide for the regulation of common and contract carriers by Corporation Commission.

HB-277. To reduce fees for trucks 3 years old and over.

HB-28. To establish minimum wage and maximum hour standards.

SB-191. To provide that allowance may be claimed and allowed by Bureau of Revenue, for benefit and protection of motor fuel purchasers for storage within state and for distribution within state.

SB-130. To impose a tax of 2.5 mills per barrel upon all oil and ¼ mill per thousand cubic feet upon all gas, produced in state. Present provision imposes a tax of one-eighth of one percent on proceeds of all oil and gas produced in state. Would also provide for a state proration officer.

SJ Res. 8. To prohibit by constitutional amendment diversion of motor vehicle taxes.

SB-40. Chain store tax.

SB-88. To repeal act relating to assessments and collection of a license tax upon gasoline and oils sold within municipalities.

SB-101. To authorize counties wherein municipalities have assessed a municipal gasoline tax to impose a license tax upon gasoline and motor fuel sold outside of limits of any municipality within county limits. Such tax would not exceed 1c per gallon.

SB-13. To repeal port-of-entry law.

SB-107. To provide that the nonratable purchase of oil or gas in any field shall constitute waste.

'Divorce' Bill Hearings Set

By Teletype
N. P. N. News Bureau

WASHINGTON, May 15. — Hearings on the Harrington petroleum marketing divorcement bill (House Bill 2318) will begin here May 24, committee attaches said today.

They will be held by sub-committee No. 3 of the House Judiciary Committee, chairmaned by Rep. Arthur D. Healey, Mass. Other members are Representatives Sam Hobbs, Ala.; Dave Satterfield, Va.; Clarence E. Hancock, N. Y., and Raymond Springer, Ind.

Although no official list of witnesses has been made up as yet, Paul E. Hadlick, secretary of National Oil Marketers Ass'n., regarded as one of the measure's chief sponsors, told NATIONAL PETROLEUM NEWS today that he will appear in its behalf, and that probably several other representatives of his association will make appearances.

The Harrington bill provides that it shall be unlawful for any person to be engaged in commerce in the marketing of refined petroleum products "while such person or affiliate of such person is also engaged in one or more of the other three branches of the petroleum industry, namely production, refining and transportation."

Bill also would direct the U. S. attorney general "immediately to examine the relationships of persons now engaged in one or more branches of the petroleum industry and to institute suits in equity . . . . for the issuance of mandatory injunctions commanding any person to comply with the provisions of this act."

Justice Department Asks Supreme Court For Mandamus Writ

N. P. N. News Bureau

WASHINGTON, May 15. — Robert H. Jackson, U. S. Solicitor General, has asked the U. S. Supreme Court to review the action of the Seventh Circuit Court of Appeals at Chicago in denying the Justice Department's petition for a writ of mandamus against U. S. District Judge Patrick T. Stone, who conducted the Madison oil trial.

The justice department seeks the mandamus on the contention that Judge Stone acted outside his legal jurisdiction in dismissing 11 Madison case defendants after a jury verdict of guilty had been brought in against them. The circuit court refused to issue a mandamus against the Madison judge, which would have ordered him to rescind the dismissals, on the ground that to do so would place the 11 defendants in jeopardy for a second time. (N.P.N. Feb. 22, P. 15).

It has been known for some time that the Department would ask the Supreme Court for the action against Judge Stone which the Circuit Court denied, as the record in the Circuit Court case has been on file with the high court for several months.

Oil's WASHINGTON CALENDAR . .

Below are given the dates and notices of hearings, proceedings, new legislation, etc., which are of importance to oil companies. Notice is also given of regulations issued, interpretations of laws, new publications, etc., with information as to how readers may secure official copies of these.

HEARINGS:

Interstate Commerce Commission:

June 5—On proposed rail rate cut on oil from N. Pacific Coast points to inland destinations in Wash., Ore., and Idaho. (Low rate suspended on plea of Northwest truckers.) Portland, Ore.

June 5—On ICC order for general study of truck rates on petroleum products from Montana refining points to Wash., Ore., and Idaho destinations.

Temporary National Economic Committee:

June 26 (tentative date)—"Forum" for oil industry.

North Carolina Gasoline and Oil Inspection Board:

May 22—On changes in specifications for the three grades of gasoline marketed in N. C. "All interested parties invited to attend and present their views."

REPORTS AVAILABLE:

(Following available from Bureau of Mines, Publication Section, Washington, D. C.):

"Quarterly Report on World Retail Prices and Taxes on Gasoline, Kerosine and Lubricating Oils."

R. I. 3442. "Analyses of Crude Oils from Some Fields of Oklahoma."

"Petroleum from Sparta-Wilcox Fields, Texas and Louisiana."

(Following available from Superintendent of Documents, Government Printing Office, Washington, D. C.):

RP 1166, "Permeability of Neoprene to Gases." Theron P. Sager and Max Sucher. 5 cents.

M 161, "Report of 28th National Conference on Weights and Measures Held May 31, June 1, 2, and 3, 1938." 30 cents.

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Virginia's Army of Peace Pauses

To Salute Its Past, then Marches On

By WARREN C. PLATT, Editor

RICHMOND, Va., May 14.—A bit of the war-panoplied past, with flags flying and bands playing, paraded grandly down Richmond's historic streets this Sunday morning. The scarlet of the Red Coats who came to these shores under a King George of another century, and the Blue and White probably of the old French Empire, flashed in and out from under the green of Richmond's tree covered streets—all this as viewed from high up in a modern hotel window. Today they are celebrating the 150th anniversary of "The Richmond Blues," one of the nation's oldest and most famous militia organizations.

A modern motor cycle cop, gun on hip, with as much dignity as a slow chugging internal combustion engine can offer, led the descendants of the Red and Blue Coated Armies of history. At his command traffic lights paused at "green" and gave their warning "red" eye to keep the stream-lined motor cars of today from interfering with this pageantry of yesterday. Oil industry service station attendants, in their decidedly functional uniforms of today's most modern transportation service, stood at attention as "the colors" of yesterday's grandeur and of today's United States went by.

The parade of past victories—because defeats are never celebrated with military pageantry—strode valiantly down the avenues to a cathedral, there to stand and sit and kneel through a service that has blessed millions before them as they went to war, way back into the centuries, through a service that has buried millions and has welcomed home the always fewer returning ones whether victors or not. Today, as for centuries, the Man of the Army of Peace in his simple uniform of white surplice and cassock, finally asked for the kneeling men in the Scarlet and Blue of yesterday, just as His Predecessors have asked for all and sundry the world over, some of "That Peace that Passeth All Understanding."

Whereat the armies of the past arose from their knees, donned high fur shakoes of another era, the drums rolled, the bands played the March of the Church, "Onward Christian Soldiers," and they strode back up the tree shaded avenues, past the oil industry's stream-lined service stations, past the waiting automobiles and the crowds they had brought from miles around, with the motor cycle cop chugging grandly at the head on his two pints of the world's most powerful transportation fuel, and again bidding the "green" lights of today's commerce of peace to halt and let the majesty of past wars proceed.

Over at Lexington, Va. today the South's most famous military academy is likewise celebrating the wars of a hundred years, though its graduates have been among the great contributors to the peacetime prosperity of their state as well as of their nation. On that school's parade ground, before cadet corps of 700 and visiting thousands of graduates and visitors, stands an old man. He is receiving the homage of the school and of its illustrious past. He is the last survivor of a feat of heroism that makes the fiction of boy school books sound tame, for this old man was one of a battalion of cadets who 75 years ago marched for 84 miles, night and day, through mud and rain, and then alone, holding one part of the Confederate lines, withstood a charge and then charged in turn, and helped to turn back an Army of the North that was invading Virginia during the War between the States.

This is Virginia, Old Virginia. You doff your hat to her glorious past just as you applaud her achievements of the modern today. The men who marched down her avenues just now, adorned in all the gold and glitter of yesterday's armies are those who are building a new Virginia. Celebrating the sesquicentennial of "The Blues," there are visiting here, in their uniforms of past greatness, similar organizations from this older part of the United States. They too are the business men and the oil men of today.

Still, part of the industrial picture is over at Lexington today. Standing with the thousand and more alumni and guests of that famous school to honor the veteran of that boy battalion of a cruel war of yesterday, is the young oil man who was toastmaster at the dinner of the Virginia Oil Men's Association here the other night. And judging from the "V.M.I." salute that greeted him at the banquet as a "Brother Rat," are undoubtedly some of his fellow oil men from that same dinner.

It is all a part of the picture of this country, new factories, the latest in water navigation, and new roads that stretch through rich farms and fine orchards back over her mountains and through her fertile valleys.

Virginia, along with the rest of the "Old South" is growing rapidly and steadily. With it, too, the oil industry is growing. Ever since the coming of the "gasoline age" there has been an increase in motor fuel consumed. In the first two months of this year Virginia's increase was 5.85 per cent which is more than 10 per cent greater than the average for the rest of the United States. Virginia's coast has modern tanker oil terminals and far up her inland waterways are modern barge terminals. From these to the western borders of the state run efficient truck transports.

There is no question but what the oil industry is and will continue greatly to contribute to Virginia's future industrial greatness for it is gasoline that will spread a growing population, not all from within the state either, over her varied opportunities, at a smaller investment and with less cost than any other pioneer development of her history.

Independent Jobber Urges Extension of Connally Law

By Teletype

WASHINGTON, May 16. — Chairman Cole of the "oil" subcommittee which held hearings on extension of the Connally "hot" oil law said today he will not call his committee together to consider the extending bill until the record of the hearings has been printed. He indicated this would not be earlier than the first of next week, if then. The Bill (S-1302) already has passed the Senate.

Meanwhile, it was learned that George C. Newton, Lake States Oil Co., of Iron Mountain, Mich. has written a letter to Cole asserting that he believes the position taken by National Oil Marketers Assn. against the "hot" oil law represents the viewpoint of but "a small section of the Independent Marketing Division of the industry," and urging passage of the Bill.

Cole's office said the letter had been received, and would be considered by the subcommittee when it meets to take up the Bill.

Paul E. Hadlick, secretary of NOMA and chief witness opposing the Bill, declined comment on the letter, other than to state:

"Mr. Newton is the only member of National Oil Marketers' Ass'n. who has ever expressed to me any idea of favoring the Connally Act or similar so-called 'conservation' legislation."

"We earnestly request the support of your committee for the Connally 'Hot' Oil Law," Newton's letter to Congressman Cole stated, "and believe that the oil compact between the various oil producing states should be extended to include all oil-producing states."

Newton added that he believed that the "small section of the independent marketing division" are primarily those who "would like to buy on the open tank car market almost any kind of gasoline which generally means regardless of quality and sell it in the retail market for the best price obtainable. Operations such as these tend to disorganize the market and eventually react on waste of crude oil and low prices for same and the retail customer has no assurance of quality.

"We believe that the Connally law, Senate Bill No. 1302, is a very desirable move in the direction of conservation of the oil resources of this country and prevention of undue waste. As to charges which are sometimes leveled at this measure of regulation on the ground that it results in needlessly high prices to the consumer, I would call the attention of your committee to the fact that the tank car price for gasoline is relatively a small factor in the final price which the retail customer pays for gasoline and in fact, in most states the combined tax factors, i.e., federal 'gas' tax, state 'gas' tax and sales tax, are a larger total factor than the wholesale price paid for the gasoline in the tank car market. It is a matter of statistical record that the wholesale, i.e., tank car market price of gasoline, represents on the average approximately only one-fourth to one-third of the price which the retail customer pays for gasoline. Taxes, transportation costs, the distributors and retailer margins constitute the balance.

"It seems rather absurd when witnesses before your committee will charge monopolistic price-fixing and control when, if that were so, it would only apply to the tank car market price for gasoline which, for regular grade at this time, is approximately 5 cents per gallon out of a total retail price of from 17 cents to 20 cents price when finally delivered to the consumer. This seems too much like the tail wagging the dog. Please do not interpret this statement as in any way an attack on the other factors of price which enter into the total price. The transportation costs as fixed are subject to review by the Interstate Commerce Commission; the item of taxes speaks for itself and is apparently considered necessary by the various legislative bodies. We do not believe that the National Oil Marketers Ass'n. or any other interest in the industry will claim that the margins of the wholesale distributors of gasoline are excessive and in fact, they are generally not regarded as adequate and are subnormal as compared to the period preceding 1933. We also know of no claim that the petroleum retailer's margin is excessive and it is a matter of common knowledge that most retailers as a whole do well if they make a reasonable return, in fact, the leading oil companies operate in the red in their marketing divisions."

in an endeavor to end gasoline price wars.

"Live and Let Live" is the motto of the organization. The campaign was launched with the placing of advertisements explaining how the price war that has existed off and on in Oklahoma City for many months has thrown about 200 men out of jobs.

Pittsburgh Dealers Hike Prices 4 Cents

PITTSBURGH, May 13.—Virtually all service stations in Metropolitan Pittsburgh are posting 18 cents for branded regular gasolines, an increase of 4.1 cents over the prevailing posting earlier this week, according to John Donohoe, chairman of the Associated Gasoline Dealers of Allegheny County.

On basis of present tank wagon prices, this means the dealer getting this retail price has a gross margin of approximately 4 cents, Donohoe said.

The price advance followed a mass meeting of more than a thousand dealers here the night of May 9, according to Donohoe.

All but the unbranded marketer was posting 16.5 cents—same as for branded third grade; the exception was a 16-cent posting, he said.

* * *

Chicago Dealers Increase Their Postings 2c, Leader Says

N. P. N. News Bureau

CHICAGO, May 15.—Most of the 1650 gasoline retailers who are members of Gasoline Retailers Ass'n. of Metropolitan Chicago have advanced their posted prices 2 cents to 16.5 cents on regular gasoline and 18.5 cents on premium, according to a report by C. E. Ragan, president of the association.

Output of Natural Gasoline Increases in March

N. P. N. News Bureau

WASHINGTON, May 15. — March daily average production of natural gasoline was 5,734,000 gallons, Bureau of Mines reports, above the February figure—5,621,000, but below March '38 daily average which was 5,861,000 gallons. Stocks increased from 197,736,000 gallons the first of the month to 198,282,000 gallons on March 31.

So. Carolina Receipts Up

N. P. N. News Bureau

COLUMBIA, S. C., May 8.—South Carolina's six-cents-per-gallon gasoline tax brought $1,060,084 in April, state tax officials report, 9.49 per cent above the $968,157 collected same month last year.

Around THE MID-CONTINENT

. . . By ALLEN S. JAMES

Gov. Lee O'Daniel of Texas, after two attempts to name an oil man as chairman of the state highway commission and a third attempt to name a business man, finally has named a former district judge, Bradly P. Gentry of Tyler, Tex. Since Gentry is from the heart of East Texas his appointment is expected to be endorsed by senators from that district who previously had blocked senate confirmation of the other nominees.

* * *

• He was Right Handy With a Rope

When oil was discovered near Tulsa shortly after the turn of the century Tulsa business men organized a "booster" trip by special train which took them back through the East's larger cities. Carried along on that trip as an entertainment feature was a cowboy from near Oolagah, Rogers county, Okla., who was right handy with a rope.

On June 6 a bronze statute of that cowboy will be unveiled in the U. S. Hall of Fame in the rotunda of the nation's capitol at Washington, and many Oklahomans will attend this ceremony honoring the late Will Rogers.

* * *

• WPA Spells It 'Oil Capitol'

And now comes the official announcement that there has been a brisk demand for two books that were WPA writers' projects. One of the books is titled, "Tulsa, A Guide to the Oil Capitol." It was sponsored by the Tulsa Federated Clubs. The other book is "Calendar of Annual Events in Oklahoma," sponsored by the state travel bureau.

* * *

• Live and Let Live Say Oklahoma Dealers

A real worthy organization of filling station operators has been organized in Oklahoma City, with the name "Neighbors, Inc."

Object is to call on the public for its active buying support

OIL TRANSPORTATION NEWS

Latest developments in freight rates, legislation, taxes, regulations, and new construction affecting the transporting of petroleum products by truck, barge, tanker, pipeline, and railroad.

Control of Private Carrier Would be 'Unwise'—Eastman

N. P. N. News Bureau

WASHINGTON, May 15.—The time is not yet ripe for federal control of private carriers—by truck, water or otherwise — Interstate Commerce Commissioner Joseph B. Eastman has advised Chairman Lea of the House Interstate Commerce Committee, adding that "ill-advised efforts to interfere with them might have very disturbing effects."

The subject of federal control and regulation of these carriers "calls for much more research, before any positive steps . . . can safely be contemplated. The utmost that might be done now, with any degree of wisdom, would be to provide for such research, including not only the extent of such transportation in interstate commerce of property by other than carriers for hire, but also its effect upon similar transportation by common carriers and the probable results of any attempt to subject it to public control."

Eastman wrote the letter (which has just come to light) in response to a message from Lea requesting an expression of views on the extent to which control over "interstate transportation of property other than by common or contract carriers would be practicable and desirable."

Responding, Eastman said:

"Whether such regulation is 'practicable' appears to be, primarily a legal question, for if it is practicable as a matter of law, no doubt it is practicable in other respects. We have little doubt that, if public need can be shown, it would be lawful to enact legislation compelling a carrier of property, not for hire, on public ways to provide insurance or some other form of security, for the protection of persons or the property of others against death, injury or damage resulting from its operations. Whether legislation governing the right to engage in such transportation or the accounting for its cost or requiring public reports with respect to the operations would be lawful is a more difficult question."

Eastman's letter then quoted several legal decisions covering Congress' right to regulate commerce among the several states and foreign nations, and added:

"The question remains, however, whether the prohibition or limitation of the right of a person (natural or artificial) to engage in the interstate transportation of his own property, or requirements with respect to accounting for the cost of such transportation or the submission of information relating thereto, would be in conflict with other provisions of the Constitution. Regulation of this character would not, we take it, have the 'quality of police regulation.' No doubt the provision of the Fifth amendment that no person shall be 'deprived of life, liberty or property, without due process of law' is one of the possibly conflicting provisions that would require consideration.

"Prohibition or limitation of the right of a person to transport his own property in interstate commerce on a public way, where such prohibition or limitation is not for the purpose of abating such an abuse as is within the purview of what is known as the police power, is obviously a very serious matter. . . . Our tentative opinion (without further research) is that such regulation could not be sustained, unless it were definitely linked with the protection of a policy of Congress designed to promote the efficient and economical conduct of interstate transportation in the public interest, nor unless positive need for the regulation for the purposes of such protection could be shown. . . .

"There are steps, falling short of direct control, which may be taken to limit the spread of such private transportation. Division 5 of the Commission has, for example, refused to grant to private carriers of property certificates or permits entitling them to engage also in common or contract carriage. Such a policy could by law be extended to water transportation."

Tankers Need Trained Crew, Fire Protection Group Told

N. P. N. News Bureau

CHICAGO, May 15.—A properly trained crew is essential to keep casualties at a minimum even on tankers equipped with all modern safety devices, Robert E. Coombs, principal traveling inspector, Bureau of Marine Inspection and Navigation, told the National Fire Protection Assn. convention here last week.

The safety record of tankers is remarkable, Coombs told the convention, and in a large measure is accounted for by the voluntary safety campaigns of oil companies.

"New tankers may be built and equipped with all the safety devices known to modern practice," Coombs said, "but, if casualties are to be kept at a minimum a properly trained crew is essential.

"Rules and regulations will not alone suffice to bring about the results desired. The solution appears to lie in stressing the importance of strict observance of these rules by stating the reasons for each one, and cite specific cases involving tragedy as a result of failure to obey. . . . . .

"The degree of safety attained in the handling of the cargo is little short of remarkable, and it is due to the safety campaigns in a large measure which a number of oil companies have voluntarily conducted over a long period of years, carefully thought out, informative campaigns which deal with the manifold operations involved from the time petroleum" is produced through marketing.

The bureau began its inspections Nov. 10, 1936, Coombs reported and "not one tanker received final certificate without a change of some sort, in either structure of equipment."

"Tank vessels of the United States are better equipped and safer," he said. "The dispensing tanker, refueling a shining motor yacht does not present the hazard it formerly did. The unregulated nondescript vessel which menaced our cities is gone."

More than 2000 American tank vessels are under government inspection, he said, of which 533 are over 100 gross tons, 124 are under 100 gross tons, and the balance are barges.

The committee on truck transportation reported that it "desires to accumulate further factoral data as a basis for its further deliberations and solicits the co-operation of all those interested through the collection of data on truck fires," and that a comprehensive report of the committee's work is expected to be ready by next year.

The committee reported its function "as that of establishing a guide to good practice in the prevention of loss of life and property by fires and explosions in truck transportation, and feels that there is a real need for its activity in this field, irrespective of the existence of legal requirements on various phases of truck transportation promulgated by federal, state and local authorities."

To further clarify its intentions the committee has voted to preface its detailed report when printed with this statement "This report, as presented, is not intended for adoption in law."

Topped Crude Rates From Illinois Field Come up for Hearing

By Teletype
N. P. N. News Bureau

WASHINGTON, May 15. — Hearings will be held before the trunk line freight traffic managers' committee at New York City May 25, on the proposal to cut rates on topped crude from Illinois producing points to refinery destinations in Western Pennsylvania and New York, (NPN, May 10, page 17).

The proposal is to reduce rates on topped crude to 22 cents per 100 pounds, the same as has already been made applicable to crude oil from the Illinois points to some of the "oil region" destinations. Present class rates amount to about double this amount.

Senate Vote Expected Soon On New Transportation Bill

N. P. N. News Bureau

WASHINGTON, May 15. — The Wheeler-Truman omnibus transportation bill (S. 2009) seeking to codify and incorporate into one statute the present Interstate Commerce Act and Motor Carrier Act, and to bring water carriers and pipelines more firmly under Interstate Commerce Commission jurisdiction, has been reported to the Senate and action is expected soon. The bill has White House approval.

According to report, a contest on the floor may develop between the Interstate Commerce Committee, which reported the bill, and the Commerce Committee, which opposes inclusion of water carriers under ICC jurisdiction.

One new section added to the bill as reported requires the ICC to investigate immediately interregional freight rate differentials. Another section provides for an investigating board of three to be appointed by the President for a two year period to investigate into the various forms of transportation to determine the relative economy and fitness of each for particular classes of service, and also to determine if there exist any government subsidies for any form of transportation. This latter function of the board would duplicate, in effect, the study of government subsidies of transportation which the ICC has had under way for four or five years, and which is expected to come out in the form of a report sometime this summer.

The bill would make provisions of the long-and-short haul clause applicable to motor carriers as well as rails. This clause provides that the charge for a longer haul shall be no less than a combination of charges for the several shorter hauls over the same line and in the same direction.

Beaumont Hearings Postponed

By Teletype
N. P. N. News Bureau

WASHINGTON, May 15. — Hearings scheduled at Beaumont, Tex., for June 7 on the complaint of the port of Beaumont that its rail rates to and from inland points were discriminatorily high, compared with rates to and from other Gulf ports, have been postponed to a date to be fixed later. An Interstate Commerce Commission examiner will hold the hearings.

ICC Calendar On Oil Trucking

HEARINGS

Kit F. Clardy, et al, May 22, Sherman Hotel, Chicago, on application to control **Bulk Haulers, Inc.**; and **Bulk Haulers** on application to purchase Petroleum Transit Corp., same date and place.

Mortensen's Express, Hartford, Conn. June 23, Hartford, on extension of operations as a common carrier of petroleum products, etc., in Conn. and N. Y. over irregular routes.

Pacific Transport, Inc., Seattle, Wash. July 7, Seattle, on extension of operations as a common carrier of petroleum products in Wash., Ore., and Idaho over irregular routes.

Keenan Bros. Inc., Steubenville, Ohio. July 7, Columbus, Ohio, on extension of operations as a contract carrier of gasoline and petroleum products in Ohio, Pa., and W. Va. over irregular routes.

L. L. Erskine, Cambridge, Ohio. July 8, Columbus, on extension of operations as a common carrier of machinery used in development and discovery of petroleum in Ohio, Mich., W. Va., Ky., Pa., Ill. and Ind. over irregular routes.

Petroleum Transportation Co., Seattle, Wash. July 13, Spokane, on extension of operations as a common carrier of petroleum and products in Wash., Idaho and Mont. over irregular routes.

T. L. Cunningham, Spokane, Wash. July 14, Spokane, on extension of operations as a common carrier of gasoline and petroleum products in Wash. and Idaho over irregular routes.

Sprague Auto Freight, Ritzville, Wash. July 14, Spokane, on extension of operations as a common carrier of petroleum, etc., in Wash. and Idaho over irregular routes.

Mogul Transportation Co., Portland, Ore. July 17, Portland, on extension of operations as a common carrier of petroleum in Ore., Wash. and Idaho over irregular routes.

Trainload Rate Bobs Up Again

TULSA, May 16.—Rails proposal (S.W.F.B. 16460) for reduced rates on "trainloads" of petroleum products from Mid-Continent points along the Rock Island railroad's line to the Twin Cities has been revived and will come up for further consideration and possible action at meeting of the General Traffic Committee of Southwestern Freight Bureau in St. Louis May 17.

The proposal was on the docket of the Executive Committee for consideration at its last hearing, but was reported nosed out by consideration of an unpublished proposal for a 7.5 to 9.5 cent a hundredweight reduction in carload rates from Group 3 origin points to Indiana Standard territory.

Supporters Bashful

At a recent public hearing by the Bureau, representatives of Shell Oil Co., Standard Oil Co. of Indiana and Great Lakes Pipe Line Co. are reported to have appeared against the trainload proposal. No one appeared in favor of the trainload rate, it was said.

Docket 16460 calls for a 7.5 cents a hundredweight reduction in light oil rates and a 6 cents cut in rates on low grade oils shipped in trainload lots—minimum of 40 cars — to the Twin Cities. Proposal is said to reduce by 0.5 cent a gallon the one cent advantage pipeline shippers are reported to have over rail shipping refiners.

New High Set In Oil Safety

N. P. N. News Bureau

NEW YORK, May 15.—The oil industry enjoyed its best year in 1938 since the American Petroleum Institute started to compile records on disabling injuries in the industry, a summary compiled by the Institute's department of accident prevention shows.

The summary reports 12.64 injuries per million hours worked and 1.59 days lost for each one thousand hours worked by the 316,987 employes of the 144 companies included.

Compared with the previous year, injury frequency declined 13.4 per cent and injury severity 4.8 per cent. Fatalities were 36.6 per 100,000 workers, compared with 36.9 in 1937, and 41.9 for 1936.

Frequency of injury was lower in 1932, the summary states, and severity of injury was lower in 1935, but the 1938 injury index of 28.54 is the lowest on record. The "injury index" represents frequency of injury per million hours worked plus severity based on the number of days lost per ten thousand worked.

The report covers more than 80 per cent of the refinery employes in the United States; about 60 per cent of the production and natural gasoline workers; and about 70 per cent of oil pipe line and marine employes. A large number of wholesale marketing employes, such as tank truck drivers and bulk plant operators are represented, the summary states, but few service station operators are included.

'Hot' Oil Law Never Lapsed, Court Decides

By Teletype

WASHINGTON, May 15. — In an unanimous opinion, the U. S. Supreme Court today ruled that the Connally "hot" oil act has never expired, and hence alleged violators indicted after expiration of the "first" act were liable to prosecution under the extension of the law, which was enacted before expiration date of the original.

The ruling was on appeal of the justice department from an order by Federal District Judge Kennerly in Texas, in which the Texas judge quashed indictments charging Renne Allred and Neal Powers with transporting "hot" oil from Conroe Field, Texas to Marcus Hook, Pa., between November, 1935, and March, 1936.

Kennerly ruled that the pair could not be punished under an indictment of September, 1938, when the original expiration date of the act was June 16, 1937, since the resolution of Congress of June 14, 1937, extending the law, did not specifically say that persons still could be prosecuted for violations before actual expiration date.

In the high court's opinion, the first delivered by the new Justice William O. Douglas, the contention of the government that the power to prosecute for prior violations is automatically extended by a resolution extending an act of Congress, unless the resolution specifies otherwise, was upheld.

Tennessee-to-Gulf Link Would Cost $60,000,000

N. P. N. News Bureau

WASHINGTON, May 15.—Construction of a waterway connecting the Tombigbee and Tennessee rivers in north Alabama and Mississippi, would cost about $66,000,000, the War Department has estimated.

Such a waterway, which has been advocated for some years by persons interested in water transportation, would greatly shorten the water distance to Tennessee Valley points from the Gulf of Mexico. It would enable petroleum products, now moving up the Tombigbee as far as Birmingham (over 400 miles), to move up the Tennessee river nearly to the Virginia-Tennessee line.

Virginians Hear Platt On Today's Marketing

By G. T. KELLOGG
N.P.N. Staff Writer

RICHMOND, May 12.—The men who make up the oil industry in Virginia—independent operators as well as major company executives and equipment men—closed a series of three sessions here tonight with a banquet and dance, after electing two groups of officers for the coming year, adopting several groups of resolutions, and hearing a talk by Warren C. Platt, Cleveland, editor and publisher of NATIONAL PETROLEUM NEWS and *Platt's Oilgram*.

First two of the meetings were held Thursday night, by the Virginia Petroleum Industries Committee and the Virginia Petroleum Jobbers' Ass'n. Today, Friday, the Virginia Oil Mens Ass'n. met in the morning, played golf in the afternoon, and banqueted and danced late.

A topic common to sessions of all three groups was the anti-diversion amendment which the P.I.C. seeks to make a part of the state constitution. Unsuccessful at the last session of the legislature, P.I.C. officials have redoubled their efforts, and E. A. Kyhn, secretary, announced that it will be marked as No. 1 objective at the next session, in 1940. Both the jobbers' association and the Oil Mens' group passed resolutions endorsing the amendment.

Morgan Heads Oil Men

Ben Morgan, Richmond, of Morgan Oil Co., an independent jobber, was elected president of the Virginia Oil Men's ass'n., which includes both majors and independents. W. W. Payne, Texas Co. representative in Richmond, was named first vice-president, and John Little, Pure Oil Co. Norfolk representative, second vice-president.

Directors elected include M. B. Whiting; B. L. Ray, Richmond, of Standard Oil Co. of N. J.; Mc. C. Higgins, Galax, of Higgins Oil Co.; Otis Minitree, Petersburg, of Delta Oil Co.; William Stokeley, Richmond, of Continental Co.; and Curtis Davis, Richmond, of Pure Oil Co.

Platt, the speaker at the V.O.M.A. meeting, was introduced by B. L. Ray, who said Platt "has accomplished more to keep this industry on an even keel than anyone I know."

Opening his speech, Platt told the oil men he wanted to bring out two points: First, the many and varied conditions that are pressing "you as marketers of gasoline", and second, "who makes the prices."

In listing the conditions which are pressing down the industry's price structure, Platt started back at the well, and named the crude oil situation as No. 1. He said that the producing end of the business, conscious of large and ever-growing known reserves, has treated this knowledge just like so much money in their pocket, but that they have feverishly sought to produce as much as possible to convert it into money.

The result has been that some of them have cut the price, and so the crude oil and products markets are affected. The new production in Illinois he cited as exemplary of this feverish haste to get the oil above ground—at cut prices, if necessary.

The battle of the small independent refiner to hang on, even in the face of many jobbers switching over to the larger companies with nationally-advertised brands, was another factor cited.

Varying transportation costs also plays a part in keeping the retail market down, he added. The cheaper methods of water and truck transportation are taking over new gallonages every day, with the result that the tendency in transportation cost is downward, as competing rail and pipeline carriers have cut rates to meet competition.

Direct delivery from refineries to retailers has been developed as a result of truck transportation, also cutting down operating costs with "an alarming effect on markets", he said.

What will the windup be? Platt hesitated to predict, but he said that whichever is the most efficient method of operation will come out on top.

Two other very important elements in the downward market trend and the narrowing margins of the past "depression years," the publisher pointed out, were unemployment of men and unemployment of real estate.

One can't blame, he said, the unemployed man who, without any other income, decides he can at least maintain his self-respect and make a few dollars at operating a service station—and the industry should take a bow for having kept these men off WPA and out of the bread lines.

Unemployment of real estate is a similar factor, it was pointed out. With a rapid transportation development and a tendency toward "spreading out" on the part of cities nowadays, dozens of unused lots in the downtown section of every city have been converted into parking lots with the inevitable gasoline pumps.

Still another factor: The so-called Iowa Plan, or dealer marketing plan. Through it, because of taxes and for other reasons, the big oil companies turned the retail marketing operations over to thousands of former employes, each of whom fought to keep up the gallonage he had previously maintained—urged, of course, by his supplying company. The only way the newly-created business man knew to keep up his volume was by shaving the price, and once cut, it was virtually never restored.

What's the Price Policy?

From this point the speaker stepped over to his second point, asking categorically, "What's the price policy of this industry?"

Before the Standard Oil dissolution suits a generation ago, John D. Rockefeller maintained 85 per cent of the gallonage sold in the country—not so that he could boast of having this control, but so that he could "maintain the price up," Platt declared.

But the whole record of the independent oil industry has been to sell at a *lower* price. Even today many of the various marketing laws which have been enacted, and some of those still sought by the independent branches of the industry, have tended to make prices go down, he said.

"Who," Platt asked, "has ever tried to advance a price ahead of a major company? I can only name a handful."

He cited several instances, then declared:

"For the most part, this industry has been thinking too much of the other fellow's price—so much off such and such a price—and its whole philosophy has been to move products by price rather than by selling."

The speaker asked his listeners to "look at the good signs in this industry—increasing demand, new methods and a dozen others—whereas so many other industries are sick. You can make this a good and profitable industry."

Cong. David Satterfield of Virginia was toastmaster at the Friday night banquet, distributing the golf prizes, introducing guests, and otherwise presiding, until the banquet was cleared away, an orchestra brought in, and dancing begun.

Jobbers Elect M. B. Whiting

RICHMOND, May 11.—M. B. Whiting, Clifton Forge, of Whiting Oil Co., was elected president of the Virginia Petroleum Jobbers Ass'n. at its annual convention here today. Whiting is a former president of the National Oil Marketers Ass'n.

Other new officials of the jobber group, which held its meeting here on the eve of the Virginia Oil Men's Ass'n. convention, are Ben F. Morgan, Richmond, of Morgan Oil Co. and Lacey D. Kirkmeyer, Richmond, of James River Oil Co., vice presidents. A. L. Tenser of Richmond was re-elected secretary.

Main portion of the jobber's meeting was given over to discussion of marketing conditions in the state, with particular emphasis on "excessive" commercial consumer discounts which the jobbers said were being granted by virtually all major oil companies operating in Virginia.

Three resolutions, which jobbers said would aid independents in competing with major companies, were passed. The first urged the passage of the marketing divorcement bills now before Congress; the second urged enactment of the Borah-Gillette pipeline divorcement bill, and the third petitioned Congress not to approve any further extension of the Interstate Oil Compact. The resolution condemned the compact as a "throttler of competition," and as a means whereby the producing states "circumvent the federal anti-trust laws."

Oil Credit Men to Meet

NEW YORK, May 12.—Petroleum group meetings at the 44th annual credit congress of the National Assn. of Credit Men to be held June 11 to 15 at Grand Rapids, Mich., will be headed by B. W. Atwood, Shell Union Oil Corp., New York, chairman; and by H. E. Batcher, Cities Service Oil Co., Chicago, vice-chairman.

Independent Oil Men Hit California Probe

N. P. N. News Bureau

LOS ANGELES, May 13.—The California oil industry is up in arms over the threatened federal grand jury investigation of West Coast oil companies for alleged monopolistic practices.

Outline of the probe was announced May 1 by Assistant Attorney General Thurman Arnold, head of the Justice Department's anti-trust division, citing the fact that gasoline prices on the Coast rose sharply in 1936 and have since "exhibited a stability without precedent in the area."

Protests of dealers, marketers, refiners and producers have been forwarded to Arnold, suggesting a settlement of differences around a conference table rather than by a costly and ruinous court battle.

Meanwhile, 300 prospective grand jurors have been called, out of which the investigating panel will be selected May 26, unless the appeal of the California industry for conference and negotiation is heeded.

Directors of the Retail Petroleum Dealers Ass'n. of California, representing 750 individual retailers, adopted a resolution in which they pointed to the "fair measure of sound marketing which has been maintained" on the Pacific Coast in "recent years through the use of fair trade and other laws, which permitted small independent refiners, distributors and retailers to operate at a profit."

The resolution cites the low prices for petroleum products in comparison with other commodities and the "constantly large and increasing burden of local and federal taxes borne by the industry."

"The difference in gasoline prices between the Pacific Coast and other districts," the resolution adds, "is largely a difference of retailer and jobber margins for which supplying companies cannot be reasonably blamed."

History of past prosecutions of this nature, it states, "shows that it is the smaller independent units which receive the full brunt of the market collapse, forcing them to bankruptcy, while the larger units continue to operate with strengthened power because of the elimination of their smaller competitors".

Desirable and necessary reforms, the resolution concludes can be obtained "through the medium of intelligent understanding around a council table rather than through courts, and that illegal practices, if any be found, be halted if possible without widely-publicized attacks upon our industry and the resultant disturbance of business and payrolls."

Some 700 independent retailers from San Diego to Oakland, Cal. followed this action by wiring to the U. S. Attorney General at Washington, urging his help in arbitration of the matter.

Added to the opposition to the grand jury probe was the resolution of the Independent Refiners Ass'n., composed of 30 members. It points out that the majority of these refiners are non-integrated company, constituting the largest outlet for crude produced by independent producers.

Within the past several years, refiners' resolution states, many new refiners have entered the business and were in need of stable conditions to remain in operation. Furthermore, statistics show the independent refiners and marketers as a group have increased their relative position in the sale and distribution of gasoline with the price index of petroleum products remaining subnormal in relation to other commodity price indices.

Considering these facts the refiners association asks the government, and particularly the Departments of Justice, Commerce and Labor take cognizance of the harm to the public interest to be anticipated from criminal prosecutions at this time and to appreciate that nothing but industrial ruin can result to many members of the association from such action and to realize that refiners and other small units in the industry cannot continue to pay present wages, maintain existing hour schedules and bear existing tax burdens if business conditions are demoralized and disrupted. The resolution also urges delay of criminal proceedings until all efforts to solve the matter through other means have failed.

North Carolina Jobber Group Plans Meetings in Drive for New Members

RALEIGH, N. C., May 15. — Sectional meetings will be held through North Carolina next week as part of a drive to increase membership in North Carolina Oil Jobbers Ass'n.

First meeting is scheduled for Goldsboro on May 23, the second at Greensboro on May 24 and the third at Morganton, May 25. A meeting of the entire state membership will follow some time in June at Raleigh.

J. H. Parker, New Bern, president of Coastal Oil Co. was elected president of the North Carolina association at a recent meeting in Greensboro.

E. M. Thompson, Goldsboro, of Thompson-Wooten Oil Co., retiring president, was elected vice-president for the eastern section of the state, while C. M. Barringer, Newton, of Superior Petroleum and Fuel Co. was elected vice-president for the western section.

Miss Frances Johnson was appointed secretary-treasurer of the association and offices were opened in the Lawyers Building at Raleigh. Previously no full-time secretary had been employed.

Commercial consumer discounts and diversion of motor vehicle funds will occupy much of the attention of the association for the time being, according to President Parker.

"It is hoped," Parker added "that through this association of all of the jobbers we can eliminate many of the evils now besetting the industry. And with a strong local state organization we can strengthen the work of national organizations interested in the same problems."

Penn Grade Meeting Changed

OIL CITY, Pa., May 12.—The Pennsylvania Grade Crude Oil Assn. will hold its annual meeting, June 15 and 16, at Pittsburgh, instead of Hershey, Pa., as previously planned, the association has announced.

There will be eight speakers for the two day session, talking on production, refining, marketing and sales. Subjects and speakers will be announced later.

North Dakota Urges Ending L-3 Method

N. P. N. News Bureau

CLEVELAND, May 15.—A report of the state food commissioner and chemist of North Dakota, who is in charge of the oil inspection division for the state urges refiners to discontinue the L-3 method of determining octane numbers of gasoline "and get back on the official method."

Minimum octane ratings for gasoline required by North Dakota law are according to test "by the official method and not by the unofficial L-3 method which is being used by refiners in a certain area," it was emphasized in the report.

The report goes on to say that if changes are needed, "influence" with the National Bureau of Standards and with the American Society for Testing Materials should be used "to obtain those changes rather than continue the present confusion due to the use of two methods."

The oil inspection division announced that it has installed the second octane testing machine at Bismarck to speed testing of motor fuels.

'Don't Do It Again,' Is Oil Conservation Message

CENTRALIA, Ill., May 12.—"Don't Do It Again" is the caption at the top of the most recent ad in the campaign for the conservation of Illinois crude supplies, currently being sponsored by the Independent Oil Producers of Illinois.

"Conditions on the west side of the Illinois basin today point to a repetition of those early years from 1907 to 1911 when wells ran wide open and without regulation resulting in a loss in excess of $20,000,000 to landowners and independent oil producers as well as various oil communities", the ad states.

Figures are cited, showing that from 1912 to 1920 inclusive, production was lower although the same total amount was run each period but during the nine years of orderly marketing crude sold for almost three times as much as during the five years of "boom" times.

CLEVELAND—Standard Oil Co. of Ohio has purchased half interest in Owensboro-Ashland Co.'s 300-mile gathering system which is connected to about 2500 wells in Western Kentucky fields, formerly owned by Illinois Pipe Line Co.

140 Witnesses Tell Story Of Tulsa Refinery Strike

N. P. N. News Bureau

TULSA, May 15.—Trial of 99 men on charge of unlawful assembly in connection with the strike of the oil workers' union at the Mid-Continent Petroleum Corp.'s plant last Dec. 22 swung into its second week today with more than 140 witnesses having testified. Indications were that at least 50 more would be heard before the trial is completed. Indictments were returned by Tulsa county grand jury.

Considerable testimony last week was directed at "identifying" the defendants as being present in the refinery's turbine plant when the strike was called. To meet this, alibi evidence was presented for a number of defendants.

One highlight of the first week's testimony was the appearance on the witness stand of J. L. Coulter, acting president of the international union. Coulter testified that he had authorized the strike on the ground that the company had refused to bargain collectively with the local union, but that his authorization was given by long distance telephone after the strike had been called.

Coulter attempted in his testimony to show that there was a very loose connection between the C.I.O. and the Oil Workers' Union local. He said that members of the local union are not actually a part of the Congress of Industrial Organizations, but are merely affiliated, "like a local lodge being affiliated with a parent lodge." He also said members of the local union do not belong directly to the C.I.O.

Another highlight late in the week was the detailing of the strike strategy by A. H. Norcum, chairman of the union's five-man committee.

Norcum, an employe of the refinery for 21 years, testified that all plans had been completed 48 hours before the strike was called, and that the time—3:50 p. m.—was decided upon because foremen were not on duty at that time and there was a smaller number of non-union employes on duty than at other times.

President Jack Hays of the local union, whom the defense has indicated takes full responsibility for calling the strike, testified the striking employes met at the turbine plant for self protection because they were afraid of the loyal workers and the guards on duty at the plant.

Hays also told of accompanying Sheriff Garland Marrs to the office of Vice President F. B. Koontz of the corporation after the strike was called and of having a talk there in which, Hays said, Koontz had angrily ordered the head of the refinery guards to go to the turbine plant and drive the strikers out.

Following failure of another conference here May 14 in which Gov. Leon C. Phillips attempted to bring the union and corporation representatives to an agreement on terms which would end the strike, announcement was made by the union men that a new plan was being drafted and would be submitted to the corporation's spokesmen later this week.

Phillips announced following the Sunday conference that he had washed his hands of the whole thing. He said that the corporation had promised it would re-employ all strikers who had not been guilty of violence and that the state could not keep the national guard on duty while the strikers made up their minds what they wanted to do.

Trial of 36 union leaders, charged with riot and conspiracy, was postponed May 13 until late in June. Trial was scheduled for May 15 in district court. Delay was granted because trial of the 99 men on the unlawful assembly indictment was not completed.

The federal government is believed to be considering investigation of the strike, following a recent recommendation of a federal grand jury here.

"Statements have been presented to us," the grand jury's report said in part "concerning probable violations against the United States, but our investigation discloses no investigation has been made conducted by an impartial, fact-finding body because the evidence concerning such violations has not been heretofore presented to the proper government officials."

The Mid-Continent Petroleum Corp. has filed with the National Labor Relations Board, meanwhile, a 51-page answer to the union charges of unfair labor practices. Hearing on the complaint is expected to open in Tulsa about May 18.

Guards Pulled Out Of Tulsa Strike Zone

N. P. N. News Bureau

TULSA, May 15.—National guard troops were removed late May 14 from the military zone around Mid-Continent Petroleum Corp.'s West Tulsa refinery by Gov. Leon C. Phillips following a conference with representatives of the company and the union. Troops had occupied the zone since Dec. 24, a total of 141 days. Matter of keeping peace was left to local officers.

Frank Phillips Fetes Natural Gas Men With Barbecued Buffalo and Antelope

N. P. N. News Bureau

TULSA, May 12. — The natural gas section of the American Gas Assn. on May 11 completed its four-day convention here and then went to Oil Man Frank Phillips' Woolaroc ranch near Bartlesville, Okla. for a barbecue-picnic. Approximately 500 gas men were fed barbecued buffalo and antelope, among other more typical picnic foods and refreshments.

The convention was the 33rd for the natural gas section. Its program, under the direction of Elmer F. Schmidt, vice president of the Lone Star Gas Co., Dallas, and chairman of the program committee, was devoted to discussions of merchandising and technical problem of the natural gas industry.

Special emphasis was placed on new markets for natural gas, among them air conditioning, and the public relations work that the gas men can do in connection with their contacts with the public.

Schmidt has been nominated for the presidency of the natural gas section for the 1939-1940 term, succeeding Thomas R. Weymouth, vice president of the Columbia Gas & Electric Co. Harry D. Hancock, Gas Advisors, Inc., New York, has been nominated for the vice presidency. Their election will be held in connection with the American Gas Assn.'s annual convention in October.

One feature of the program was the honoring of two charter members of the section, C. W. Sears, Pasadena, Calif., and M. W. Walsh, Louisville Gas & Electric Co., Louisville, Ky. They are two of the three men now living who met with 10 others in Kansas City back in 1906 to form the association.

Oil Men Crowd API Meeting In New Orleans

(*Continued from page 9*)

crease in power output. Further increase in compression ratio in the automobile engines of tomorrow, to take advantage of the higher octane fuels, has great possibilities in economy of operation, acceleration, hill-climbing ability and power output, his paper reported.

Development of a method, reproducing in the laboratory what happens in actual car performance when the traffic light turns green and the driver "steps on the 'gas'," is to be reported by Herschel G. Smith, Philadelphia, of Gulf Oil Corp.

The testing equipment includes a power absorber which permits any regular multi-cylinder engine to be accelerated to high speed under load, a 2550-pound flywheel which produces the effect of inertia caused by the weight of an automobile, and a friction brake or water dynamometer, which produces the load. The average deviation from road tests, in four test groups, was said to be less than two per cent maximum.

The economic practicability of midget polymerization and isooctane units in connection with small refineries is to be discussed by Dr. Gustav Egloff and W. B. Shanley of Chicago, Universal Oil Products Co. Their paper states that the cost of these units is from $15,000 to $35,000 and that some of the midget units have paid installation costs in less than 40 days. The use of these units is said to have increased gasoline production from two to 8 per cent, with an octane number rise of one to two numbers, when processing naphtha, kerosine, gas oil or topped crudes.

Texas Oil Law Gets Two-Year Extension

AUSTIN, Tex., May 16.—Gov. Lee O'Daniel of Texas has signed a bill extending until Sept. 1, 1941 the oil and gas conservation statute under which the Texas Railroad Commission regulates the flow of oil and gas in the state. There was little opposition to the amendment extending the law and O'Daniel has already indicated he would sign the measure when it was passed.

California Gets New Oil Bill As C.I.O.-Backed Bill Droops

N. P. N. News Bureau

LOS ANGELES, May 13.—A new oil conservation bill has been introduced in the California legislature, following recommitment of the Atkinson Bill, backed by the C.I.O.-Oil Workers' Union. The Atkinson Bill's chances have faded almost to the vanishing point, although officially it has been sent back to committee only for some new amendments.

Introduced May 12 by Senator J. I. Wagy, the new bill (S. B. 1269) provides control of the California oil industry along lines designed to legalize the present voluntary proration machinery.

Briefly the measure, is reported to have following provisions: Waste is prohibited and definition is made of "underground" and "surface" waste, and of "reasonable market demand." It would create a Petroleum Prorate Advisory Board of 28 members, appointed by governor for a term of four years. First board to hold office for two years, without pay, and be experienced oil men.

It recognizes existence of the present California Central Proration Committee — governing body under the voluntary program—and declares the present board of 28 as duly elected and appointed— with passage of the measure.

Within 10 days after appointment, members would take oath of office and elect officers. Fifteen members would constitute a quorum. The state director of natural resources is given authority to carry out and enforce the act and is empowered to enforce rules to prohibit waste and to make rules and regulations necessary. Wide powers are delegated the director in the way of well spacing, offset drilling and so on.

Provision is made that allocation of production must be on a "reasonable" basis, so as not to cause premature abandonment of any well and protection is made for stripper wells.

Stripper well is defined as one producing not more than 5 barrels for each 1000 feet of depth, and in any case not more than 15 barrels per day.

Allowables for each pool would be distributed to individual producers on a reasonable basis but such proration must not be on the basis of cubical content. This section outlines regulations for pooling of properties and drilling of offset wells. It specifies that no transfer of allowable from one field to another is legal unless authorized by a four-fifths vote of the board. Allowable crude is "legal oil" and any excess is "illegal oil".

Handling or marketing in any way of illegal oil is prohibited and enforcement machinery is set up. Attorney general is authorized to bring suit for violation, and impound illegal products.

Any person adversely affected may seek a review of his case in court, and any person found guilty of false statements or entries would be subject to a fine of $500 and/or six months imprisonment. Any person may bring suit to enforce the act if director fails to do so.

Advisory board must determine enforcement costs and assess producers according to their production. The prorate act would automatically expire four years after enactment.

Introduction of this measure has taken much of the powder from the guns of those apparently successful in opposing the Atkinson bill with arguments that the voluntary curtailment program was successful and that another form of control was not needed. Competent observers believe the prorate act has a better than even chance of passing.

D. C. 'Gas' Tax Collections Up

N. P. N. News Bureau

WASHINGTON, May 8.—January-March gasoline tax collections in the District of Columbia amounted to $631,036, tax officials report, 4.08 per cent more than the $596,670 total collected during same period in 1938. March collections, amounting to $226,975, were more than six per cent above the $213,697, collected in March, 1938.

Producers in Mid-Continent Feel Pinch of Tanker Strike

N. P. N. News Bureau

TULSA, May 15.—Oklahoma and Kansas oil producers are a long way from tidewater but some of them last week found their incomes had been affected by the maritime strike against certain companies operating tankers.

The reduction in income was due to the establishment of some pipeline proration by the Sinclair Prairie Oil Co. on its trunk line from the Mid-Continent to the Gulf coast. The company has been moving approximately 30,000 barrels daily of Mid-Continent crude through the line and then shipping it by tanker around the east coast to the Marcus Hook plant of the Sinclair Refining Co. The company is understood to have had a contract with a ship line for movement of a portion of the crude. But the strike is said to have prevented normal shipments with the result that storage at the Gulf filled to the point where the Sinclair company could not continue to take its normal amount of oil.

Just how much pipeline proration has been applied was not made known but various estimates placed it at 10 to 25 per cent. Company officials intimated to producers when the proration was announced May 11 that the move was temporary and that as soon as the situation was worked out the line would resume 100 per cent takings.

Illinois More Pressing

Pressure of the 200,000 barrels daily production in the Illinois field was being felt more strongly on the Mid-Continent crude market, observers reported late last week. Several major companies in Illinois have been diligently feeling out large crude buyers in an effort to work out some sort of deal to relieve them of the excess oil they have on their hands currently. Several two and three-way deals have been made recently in efforts to relieve a portion of the pressure.

Some pipeline proration, meanwhile, continues to exist in the southern Oklahoma stripper well areas with indications now that there is not a lot that can be done about it just at this time. One or two purchasers have been endeavoring to obtain some relief from the amount of oil they now are taking in that area even with pipeline proration being practiced.

Except for these soft spots the Mid-Continent crude situation apparently is in fairly good shape.

Pressure Drops In East Texas

Of particular interest in connection with the Texas Railroad Commission's efforts to swing more market to the East Texas field with its series of proration orders for April is the report made recently of the pressure drop in that field. With production averaging 436,500 barrels daily during April, pressure dropped 15 pounds. The pressure drop in December and January had been 1 pound, with no drop in February and a 2-pound drop in March.

Engineers have testified on several occasions that there is a production limit above which East Texas cannot go without salt water moving in so rapidly that oil production would be retarded and the efficiency of the wells impaired.

The Kansas Corporation Commission, meanwhile, is considering a three-months allowable order, such as tried in Texas. The Kansas regulatory body will hold its hearing at Topeka, May 23, and has notified purchasers to make nominations for requirements for June, July and August.

The Oklahoma Corporation Commission has set its June allowable hearing for May 25 at Oklahoma City.

Pollution Bill Gets 'Go' Sign

N. P. N. News Bureau

WASHINGTON, May 15. — House Rivers and Harbors Committee has recommended that the House pass the Senate-approved Barkley co-operative stream pollution measure (Senate 685), with minor amendments.

As passed by the Senate, the bill provides for federal loans and grants to cities, states and industries for pollution abatement; the House committee recommended making loans only available to industries, but making both loans and grants available to cities and states.

Another amendment proposed by the House committee would make the Pollution Board, which the bill would set up, a five-man board made up of four Public Health Service officers and one Army Engineer officer, instead of five PHS officers, as provided in the Senate bill.

It is believed these amendments, if passed by the House, will not meet with much opposition in the Senate, and that the measure will receive Presidential approval.

Auto Engineers Stage Cross-Country Safari

N. P. N. News Bureau

NEW YORK, May 15. — The greatest Automotive Congress of all time will begin its sessions in New York on May 22, will trek across the continent to Indianapolis, Detroit, and to San Francisco, where it will complete its transcontinental safari with three days of technical discussions on automotive matters of international interest. It will visit two world fairs, hold 60 technical sessions at which nearly 75 technical papers and addresses will be presented, and will foregather at four huge banquets in as many different parts of the country.

Papers on automotive engineering problems will be presented by 60 authors, 21 of them engineers and authorities from 14 foreign countries. Nearly one-third of the technical papers will deal with fuels and lubricants and engine developments which involve or affect those petroleum products.

This group of automotive leaders will travel nearly 4000 miles by special train, propelled most of the way by diesel-electric power, and back again, and will make four inspection trips in Detroit and Indianapolis, many of them getting their first view of American automotive progress at first-hand.

The Automotive Congress will visit New York first, for four days of technical sessions and two days for the World's Fair there. Then by special air-conditioned train the members will go to Indianapolis, for the 500-Mile Sweepstakes Race on May 30, preceding which they will inspect the racing cars and meet the assembly of world-famous race drivers there. They will live aboard the train at Indianapolis, which will "taxi" the group from the track station into the city for a banquet on the night of May 29.

To Visit Detroit

The automotive industry at Detroit will be visited May 31-June 2. A special diesel-electric train the Santa Fe "Super Chief", the 3600 hp. engine of which weighs nearly 600,000 lbs. will take the Congress then to San Francisco for three days of meetings, after which the Golden Gate Exposition will be visited before the congress adjourns.

The meetings have been arranged under the direction of Ralph Teetor, chairman and a committee which has assembled papers from representatives of 30 engineering societies in America and abroad. Henry Ford, one of the first members of the Society of Automotive Engineers, is chairman of the advisory board to the Congress, which includes Lord Austin of England and chairman of the Austin Motor Co., Ugo Gabbato of Italy, Maurice Goudard of France, Rear Admiral Land, chairman of the U. S. Maritime Commission; Alfred P. Sloan, chairman of General Motors; Bernt Balchen of Norway, Ciaude Dornier of Germany, Henry Ralph Ricardo of England, and more than a score of automotive authorities of the world.

Some 25 papers to be given before the Congress are of special interest to fuel and lubricant technologists. The Fuels and Lubricants Activity will hold sessions at both New York and San Francisco in which several foreign technologists will present papers on developments abroad. Some of these foreign engineers on the programs are J. J. Broeze and J. O. Hinze of the Delft, Holland research laboratories, N. V. de Bataafsche Petroleum Maatschappij; Dr. A. von Phillipovich, Deutsche Versuchsanstalt fuer Luftfahrt, Germany; H. Blok, also of the Bataafsche laboratories; Drs. W. P. Ricart and Sandro Sirtori, Soc. Anon. Alfa Romeo, Italy; E. W. Hives, Rolls-Royce, Ltd., England; Torbjorn Dillstrom, Hesselman Motors Corp., Sweden; Drs. S. J. Davies and Edmund Giffen of Kings College, England, and C. G. Williams of the Institution of Automobile Engineers, England.

Dr. A. E. Dunstan, research director for Anglo-Iranian Oil Co. Ltd., of England will address the New York meeting on May 22 on "Today and Tomorrow in Petroleum". Dr. Dunstan is well known in this country and abroad as an authority on refining technology.

Aviation Topics Featured

As may be expected under present conditions, a great deal of attention will be given by the Congress to aviation engine, fuel and plane developments. Diesel engines and their fuels and lubricants will receive scarcely less attention, with several papers presenting the recent remarkable developments in these engines abroad.

The following partial list of the papers to be given before the Congress during its Coast-to-Coast trip are of special interest to the refining industry.

New York, May 22-28

Experiences with Doped Fuels for High-Speed Diesel Engines—J. J. Broeze and J. O. Hinze, N. V. de Bataafsche Petroleum Maatschappij, Holland.

Relation of Diesel Fuel Properties to Their Engine Performance—W. S. Mount and G. A. Hope, Socony-Vacuum Oil Co. Inc.

The Testing of Lubricating Oil Stability in Small Engines—Prof. H. A. Everett, Pennsylvania State College.

Engine Deposits, Field and Laboratory—J. P. Stewart and B. W. Story, Socony-Vacuum Oil Co., Inc.

Laboratory Test as a Means of Evaluating Engine Performance—Dr. F. L. Miller and Dr. R. W. Richardson, Standard Oil Development Co.

Underwood Oxidation Test and Its Correlation with Service—H. C. Mougey, Research Laboratories Div., General Motors Corp.

Evaluation of the Fuel Test and Proposals for Its Formulation—Dr. A. Von Philippovich, Deutsche Versuchsanstalt fuer Luftfahrt, Germany.

Fundamental Mechanical Aspects of Boundary Lubrication—H. Blok, N. V. de Bataafsche Petroleum Maatschappij, Holland.

Some European Comments on High-Output Automobile and Aero Engines—Dr. Ing. W. P. Ricart and Dr. Ing. Sandro Sirtori, Soc. Anon. Alfa Romeo, Italy.

High Output Aircraft Engines—E. W. Hives, Rolls-Royce, Ltd., England.

San Francisco, June 6-8

Recent Developments in Diesel Lubricating Oils—G. L. Neely, Standard Oil Co. of California.

Single-Plunger Multicylinder Fuel Injection Pump — Torbjorn Dillstrom, Hesselman Motor Corp., Sweden.

Processes in Injection Systems of Oil Engines—Dr. S. J. Davies and Dr. Edmund Giffen, Kings College, England.

Aircraft Engines and Their Lubrication — Arthur Nutt, Wright Aeronautical Corp.

European Aero Engines and Fuels—r'. R. Banks, Ethyl Export Corp., England.

Trucks — J. B. Macauley, Jr., Chrysler Corp.

Aircraft—F. W. Achterberg, Junkers Corp., Germany.

Railroad—A. R. Walker, Illinois Central System.

Knock Rating Control—Dr. A. E. Becker, Standard Oil Development Co.

Diesel Fuel Characteristics Influencing Power and Economy—A. J. Blackwood and Dr. G. H. Cloud, Standard Oil Development Co.

Engine Flame Research — T. A. Boyd, Research Laboratories Div., General Motors Corp.

Fuel Oddities — Neil MacCoull, Texas Co.

Lubricating—Oil Additives—J. R. Sabina, E. I. du Pont de Nemours & Co.

Piston Ring Wear—Max M. Roensch, Chrysler Corp.

Wear of Crankshafts with Copper-Lead Bearings—C. G. Williams, Institution of Automobile Engineers, England.

Piston Ring Wear — P. S. Lane, American Hammered Piston Ring Div., Koppers Co.

Georgia 'Gas' Tax Receipts Up

ATLANTA — Georgia gasoline tax collections for April, amounting to $1,703,179, were more than three per cent above collections for April 1938 which totaled $1,647,171. Georgia has a six-cent gasoline tax.

DEATHS

So widespread is the oil industry that many friends are separated for years. NPN would like friends and relatives of any deceased oil man to send in notice of his passing for publication.

A. J. "Dad" Stevens Dies

The oil industry lost another of its old-timers with the death April 28 of A. J. Stevens in Kansas City, Mo.

"Dad" Stevens, as he was affectionately known in the industry, had been in the grease business for more than a half a century, starting with the old Excelsior Refining Co. in Cleveland in 1885. He founded the Cleveland Grease and Oil Co. in 1887, merging with the Chas. H. Moore Oil Co. of Cincinnati in 1890.

After three years he organized the Stevens Grease and Oil Co. at Cleveland, developing and pioneering fibrous gear greases, steam jacketed mechanically agitated grease kettles and metal packages for greases. Withdrawing from the Cleveland company in 1925 he organized the A. J. Stevens Grease and Oil Co. in Kansas City. This company was merged with the Battenfeld Grease and Oil Corp. in 1930, with whom he was still associated at his death.

* * *

Henry Rosenthal

Henry Rosenthal, prominent in Kansas and Oklahoma oil production circles, died May 12 from a heart ailment at Vandalia, Ill. He had lived in Wichita, Kan. for the past 20 years, having moved to that city from Robinson, Ill. He was an active independent producer in Kansas, Oklahoma and Illinois.

Michigan and Illinois to Supply East's Oil Needs, is Prediction

MT. PLEASANT, Mich., May 13.—Dr. Virgil R. D. Kirkham, prominent Michigan oil geologist and producer from Saginaw recently told the 200 members of the Chamber of Commerce here that Michigan and Illinois will perhaps produce exclusively all of the country's eastern oil when the eastern stripper wells have died down.

Kirkham prophesied that Michigan production within the next ten years would equal, if not surpass, that of the past decade and that deeper drilling with a consequent increase in production will feature future oil developments in the state.

First Quarter Shows Gains In Demand for all Products

WASHINGTON, May 14.—Domestic demand for all petroleum products in the first quarter of 1939 amounted to 285,743,000 barrels, compared with 265,397,000 barrels in the same period of 1938, according to a report of the Bureau of Mines.

Total domestic demand for motor fuel in the 1939 first quarter was 114,882,000 barrels, compared with 108,296 barrels in the same period last year.

March motor fuel demand in 1939 was over a million and a quarter barrels or about three per cent higher than the same month last year. March 1939 demand totaled 42,520,000, against 41,259,000 last year. The Bureau reported that March demand "was somewhat inflated by impending increases in freight rates".

Export of motor fuel recovered from their February slump, the Bureau reported, totaling 4,336,000 barrels in March. Stocks of finished and unfinished gasoline increased 1,630,000 barrels during March, reaching 87,121,000 barrels on March 31 "the probable peak for the year."

"Considered in the light of excessive stocks, this performance," the Bureau said, "was somewhat better than normal, but not nearly as good as in March 1938.

Demand for light fuels declined from seasonal causes in March, but the Bureau reported that heavy fuel oils continued to "show strength and the daily average total demand for residual fuel oil in March was substantially higher than in February."

'Gas' Tax Receipts Show Gain Over '38

RICHMOND, Va.—Virginia's four-cent per gallon gasoline tax netted the state $4,036,403, a 6.2 per cent increase compared with the $3,798,622 total collected during the January-March period of 1938, Division of Motor Vehicles reports. March collections amounting to $1,494,617 also were up more than 6 per cent above sum collected during same period a year ago ($1,398,503).

* * *

COLUMBUS, O.—An increase of 4,618,479 gallons, or 4.74 per cent, in gasoline consumption in Ohio in March over March a year ago, was indicated in state gasoline tax returns, according to the Ohio Petroleum Marketers Assn., Inc. Consumption in March totaled 102,052,350 gallons.

* * *

JEFFERSON CITY, Mo.—Gasoline tax collections in Missouri in March totaled $1,027,523.25, compared with $1,016,930.23 in March, 1938, an increase this year of $10,593 or 1.4 per cent, according to the Department of Oil Inspection.

Crude Runs Higher in March

WASHINGTON, May 15. — Crude runs to stills in March averaged 3,191,000 barrels daily, 55,000 barrels more than February and 98,000 barrels above the March, 1938, figure, Bureau of Mines reports. Daily average imports decreased to 53,000 barrels, 4,000 barrels less than in February. Crude oil stocks held at refineries also decreased slightly to 52,766,000 barrels, compared with 52,813,000 barrels on hand March 1.

Petroleum Supply and Demand for First Quarter of 1939*

(Figures in Thousands of Barrels)

	March 1939	February 1939	March 1938	January-March Quarter 1939	1938
New Supply:					
Domestic production:					
Crude petroleum	106,768	93,475	106,524	302,733	307,193
Daily average	3,444	3,338	3,436	3,364	3,413
Natural gasoline	4,232	3,747	4,326	12,243	12,551
Benzol (1)	192	170	143	547	422
Total production	111,192	97,392	110,993	315,523	320,166
Daily average	3,587	3,478	3,580	3,506	3,557
Imports: (2)					
Crude petroleum:					
Receipts in bond	226	332	373	1,053	613
Receipts for domestic use	1,404	1,266	2,196	4,043	5,934
Refined products:					
Receipts in bond	1,570	1,167	1,687	3,785	4,300
Receipts for domestic use	659	654	638	1,922	1,826
Total new supply, all oils	115,051	100,811	115,887	326,326	332,839
Daily average	3,711	3,600	3,738	3,626	3,698
Decrease in stocks, all oils	119	2	6,650 (3)	348	24,243 (3)
Demand:					
Total demand	115,170	100,813	110,237	326,674	308,596
Daily average	3,715	3,600	3,556	3,630	3,429
Exports: (2)					
Crude petroleum	4,966	4,810	6,121	14,253	17,402
Refined products	10,849	7,335	9,204	26,678	25,797
Domestic demand:					
Motor fuel	42,520	34,595	41,259	114,882	108,296
Kerosine	5,201	5,901	5,150	17,082	15,527
Gas oil and distillate fuels	12,304	13,712 (4)	10,487	41,743	34,780
Residual fuel oils	28,071	25,117 (4)	25,696	81,569	75,167
Lubricants	1,987	1,653	2,195	5,249	4,977
Wax	73	97	90	244	287
Coke	646	605	308	1,781	1,259
Asphalt	1,269	833	1,444	3,163	3,404
Road oil	228	180	131	581	450
Still gas	5,376	4,629	4,901	15,086	14,266
Miscellaneous	187	153	137	513	406
Losses	1,493	1,193	3,114	3,850	6,578
Total domestic demand	99,355	88,668	94,912	285,743	265,397
Daily average	3,205	3,167	3,062	3,175	2,949
Stocks:					
Crude petroleum:					
Refinable in U. S.	276,355	273,416	309,403	276,355	309,403
Heavy in Calif.	15,814	16,360	16,069	15,814	16,069
Natural gasoline	4,721	4,708	5,531	4,721	5,531
Refined products	257,232	259,757	257,226	257,232	257,226
Total, all oils	554,122	554,241	588,229	554,122	588,229
Days' supply	149	154	165	153	172

(1) From Coal Economics Division. (2) Imports of crude as reported to Bureau of Mines; all other imports and exports from Bureau of Foreign and Domestic Commerce. (3) Increase. (4) Revised.

'Gas' Stocks Take Plunge

N. P. N. News Bureau

NEW YORK, May 16. — Finished and unfinished stocks of gasoline at U. S. refineries dropped 1,408,000 barrels in the week ended May 13, according to the weekly report on refinery operations compiled by the American Petroleum Institute today.

The Institute's report covering 85.8 per cent of the potential refining capacity of the country showed that refining operations increased the past week, with a daily average of 124,000 more barrels of crude run to stills during the period. Reporting refineries operated at 83.8 per cent of capacity, compared with 80.4 per cent the week previous.

All districts of the country with the exception of Inland Texas, Louisiana Gulf and North Louisiana-Arkansas contributed to the nearly 1,500,000 barrel country-wide reduction.

Stocks of gas oil, distillate and residual fuels showed little change from the week previous, dropping only 25,000 barrels from total of 127,537 last week to 127,512 the week ended May 13.

Bulletin

RALEIGH — North Carolina gasoline and oil inspection board announced today that the hearing on proposed changes in state gasoline specifications, scheduled for Monday, May 22, had been postponed indefinitely. Officials of the Board said that those who had requested the hearing had withdrawn their request.

Mid-Continent Plans New Lube Refining Unit

By Teletype

TULSA, May 16.—Construction of a new refining unit to manufacture lubricating oils has been started at the Mid-Continent Petroleum Corp.'s plant in West Tulsa. Unit will cost approximately $800,000 and is being built under supervision of M. W. Kellogg Co. although local labor is being used. Approximately 250 workmen have been assigned to the construction project.

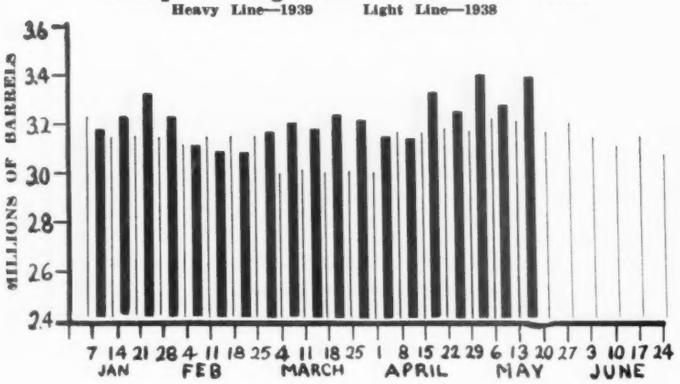
Crude Price Changes

OWENSBORO, Ky. — Fordsville Gathering Line, Inc., effective April 12, reduced Birk City area, Ky. crude 5 cents, to new price of $1.00 per barrel. Last previous change was a 5 cent cut Dec. 24 last.

Latest Oil Industry Statistics

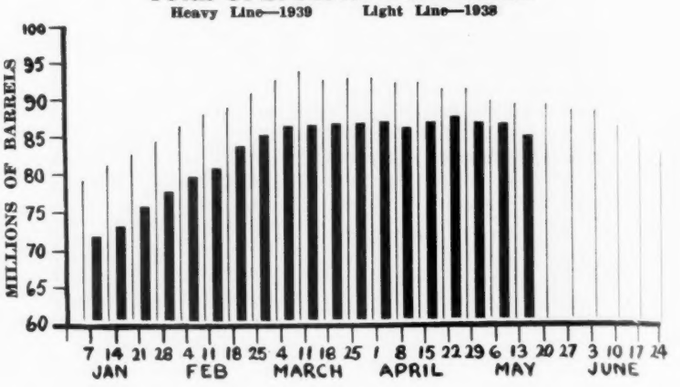
Daily Average Crude Runs to Stills

Heavy Line—1939 Light Line—1938



Total U. S. Motor Fuel Stocks

Heavy Line—1939 Light Line—1938



A. P. I. Weekly Refinery Report

(Figures in Thousands of Barrels of 42 Gallons Each)

Districts	Per Cent Capacity	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		(a) Gasoline Production Week Ended		Stocks (Thousands of Barrels) Total Finished and Unfinished Motor Fuel(b) Week Ended		Stocks of Gas and Fuel Oil (f) Gas Oil and Distillates Week Ended		Residual Fuel Oil Week Ended		Total Week Ended	
		May 13	May 6	May 13	May 6	May 13	May 6	May 13	May 6	May 13	May 6	May 13	May 6	May 13	May 6
East Coast	100.0	502	502	81.6	81.6	1,279	1,338	21,771	21,897	2,254	2,155	2,678	2,755	4,932	4,910
Appalachian	85.9	101	107	78.9	83.6	370	375	3,578	3,596	244	256	450	459	694	715
Ind., Ill., Ky.	89.5	508	457	98.8	88.9	3,018	1,799	14,563	14,859	2,196	2,180	2,715	2,725	4,911	4,905
Okla., Kans., Mo.	81.6	255	251	74.6	73.4	(c)897	(c)871	7,471	7,594	998	1,038	2,829	2,838	3,827	3,876
Inland Texas	50.3	125	97	78.6	61.0	507	478	1,611	1,602	294	279	1,542	1,485	1,836	1,764
Texas Gulf	89.5	872	853	97.4	95.3	2,862	2,761	10,647	11,362	3,214	3,365	4,844	4,735	8,058	8,100
La. Gulf	97.3	132	128	91.0	88.3	358	342	2,550	2,376	1,006	876	1,161	1,085	2,167	1,961
No. La., Ark.	55.0	42	39	76.4	70.9	124	126	554	519	246	241	538	524	784	765
Rocky Mt.	54.2	39	40	60.9	62.5	197	226	1,742	1,785	93	100	591	618	684	718
California	90.0	492	470	66.0	63.1	1,275	1,182	15,241	15,461	(e)10,298	10,570	(e)86,496	86,382	(e)96,794	96,952
Total Reporting	85.8	3,062	2,944	83.8	80.4	9,887	9,498	79,728	81,051	(e)20,843	21,060	(e)103,844	103,606	(e)124,687	124,666
U. S. Total (d)		3,400	3,275			11,172	10,732	84,808	86,216	(e)21,423	21,636	(e)106,114	105,876	(e)127,537	127,512
U. S. Total, 5-13-38(d)		3,201				10,533		89,257		(e)20,984		(e)109,175		(e)130,159	

(a) Includes straight-run, cracked and natural blended.
(b) Includes stocks at refineries, in bulk-terminals, pipe lines and in transit.
(c) 12% of reporting capacity in this district did not report gasoline production.
(d) Estimated, U. S. Bureau of Mines basis.
(e) California terminals etc., stocks included.
(f) At refineries.

Trends of Basic Figures

	May 13	May 6	May 13, 1938
Crude Production (*Bbls. daily*)	3,402,500	3,580,000	3,362,300
Crude Imports (*Bbls. daily*)	76,140	223,710	86,570
Crude Runs to Stills (*Bbls. daily*)	34,400,000	3,275,000	3,201,000
Gasoline Stocks (*Bbls. total*)	84,808,000	86,216,000	89,257,000
Gas and Fuel Oil Stocks (*Bbls. total*)	127,537,000	127,512,000	130,159,000

Crude Oil Production for the U. S.

(American Petroleum Institute figures)

	Week Ended May 13 Barrels	May 6 Barrels	April 29 Barrels
Oklahoma	453,150	459,550	462,100
Kansas	176,250	167,900	177,750
Texas	1,269,000	1,470,000	1,461,800
Louisiana	269,600	268,400	266,700
Arkansas	54,150	55,450	54,700
Illinois	209,900	200,200	185,650
Eastern (Ill. excluded)	100,750	99,450	106,100
Michigan	63,700	62,950	62,450
Wyoming	57,050	58,900	60,450
Montana	14,250	14,450	14,350
Colorado	3,600	3,600	3,500
New Mexico	110,700	110,750	108,050
California	620,400	609,300	604,600
Total U. S.	3,402,500	3,580,900	3,568,200
Crude Imports	76,140	223,710	134,710
Total New Supply	3,479,640	3,804,610	3,702,910

Socony-Vacuum Advances

NEW YORK—Socony-Vacuum Co. today announced price advances, ranging from 0.1c to 0.2c per gallon in its tank wagon gasoline prices, effective May 15, generally throughout New England, except certain Metropolitan areas such as Boston, Worcester, etc. No change is contemplated in its Metropolitan New York tank wagon prices, a company official said.

Table of Contents, formerly on this page, is now on Page 11. Coming meetings are on Page 51.

Crude Stocks Higher

By Teletype

WASHINGTON — Increasing 163,000 barrels during the week ending May 6, crude stocks reached a total of 278,607,000 barrels on that date. An increase in foreign crude stocks of 427,000 barrels was partially offset by a 264,000-barrel decline in domestic crude.

A year ago, (May 7, 1938) stocks totaled 305,748,000 barrels.

Detailed figures as to grade or origin of stocks will be found in next column.

Weekly Changes in U. S. Crude Oil Stocks*

(Thousands of Barrels)

Grade or Origin	April 22	April 29	May 6	Change from Apr. 29
Pennsylvania Grade	5,656	5,687	5,689	+ 2
Other Appalachian	1,332	1,312	1,295	— 17
Lima-Michigan	1,842	1,920	1,898	— 22
Illinois-S. W. Indiana	12,295	12,498	12,605	+107
Arkansas	3,104	3,148	3,034	—114
Kansas	7,106	7,332	7,360	+ 28
Louisiana	14,175	14,079	14,151	+ 72
Northern	5,802	5,953	6,013	+ 60
Gulf Coast	8,373	8,126	8,138	+ 12
New Mexico	6,664	6,603	6,678	+ 75
Oklahoma	69,919	69,814	69,847	+ 33
Texas	91,393	92,153	91,862	—291
East Texas	20,993	21,922	21,949	+ 27
West Texas	16,163	16,143	16,028	—115
Gulf Coast	21,811	21,731	21,430	—301
Other Texas	32,426	32,357	32,455	+ 98
Rocky Mountain	20,596	20,601	20,426	—175
California	39,814	40,037	40,075	+ 38
Foreign	3,260	3,260	3,687	+427
Total U. S. Refinable	277,156	278,444	278,607	+163
Heavy in California	15,507	15,208	14,943	—265

*As compiled by U. S. Bureau of Mines.

Refining Technology

INCLUDING INTERNATIONAL PETROLEUM TECHNOLOGY

Dear Reader:

Fifteen years ago D. E. Buchanan suggested a platform for the natural gasoline association.

If you were at the Elk's Club at Tulsa that spring day in 1924 you will remember "Buck's" address as association president. The association he said, ought to:

"1. Improve and perfect processes of manufacture and production, eliminate waste and utilize by-products.

"2. Understand present markets, study and develop new markets; keep abreast of changing market demands."

★ ★ ★

Two weeks ago the association honored a man whose personal platform has been the same as the one Mr. Buchanan suggested for the group.

The honor was the Hanlon award for outstanding service to the gasoline industry. The man honored was George Oberfell, director of research for Phillips Petroleum Co We suggest that he has followed "Buck's" platform because he has not only developed processes and by-products but he has also spent much time and effort directing the sale of the by-products, liquefied gases.

This week we publish Oberfell's picture on our front cover. And elsewhere in this issue we publish an interview with him. We hope this interview will make you better acquainted with George Oberfell, a man who has never gone upstage in spite of his accomplishments.

★ ★ ★

One of the best investments the gasoline association has made has been in its research program at the University of Michigan under Dr. George Granger Brown.

Dr. Brown came out to his first gasoline convention as a pinch hitter for another professor. When he got up on his feet he captured the men almost instantly. No dry-as-dust professor Dr. Brown can make any technical subject live for his hearers. After that first meeting Brown was in charge of research for the association and has been ever since. He had sold himself fully.

Dr. Brown is big. He has a strong, warm voice that puts you on his side at the start. When he went up against a stacked deck as he did at Dearborn, Mich., a few years ago to argue against alky-gas at a Farm Chemurgic Council meeting his personality won the group even though thumbs were down on his ideas before he began to speak.

In his laboratories at Michigan Brown likes to tinker with all sorts of mechanical gadgets. To the outside layman his engine laboratory looks like a Rube Goldberg layout. From it he has brought the industry new concepts about natural gasoline which have helped it to sell.

★ ★ ★

When George Oberfell came out to Tulsa after his chemical warfare service the infant casinghead gasoline industry was engaged in litigation with Standard of New Jersey's subsidiary, Hope Natural Gas Co. The bone of contention was the Saybolt patents covering the absorption process.

The industry wanted to use the absorption process so it could strip leaner gas of its gasoline content. But it didn't want to pay a royalty to the Standard. So it fought, and presently won, under the leadership of C. R. Burke, of Oklahoma Natural Gas Co.

In those days the gasoline manufactured at most plants was wild as a March hare. If a more stable gasoline was demanded it could be produced only by weathering and the losses were staggering.

So when the stabilization process developed by Carbide and Carbon Chemicals Corp. came along the industry welcomed the new method. A few installed the process as designed by Carbide and Carbon Chemicals. Most of them caught the basic idea but went at the job in a different way.

★ ★ ★

In 1923 J. A. Rafferty of Carbide and Carbon Chemicals first announced the stabilization process at a natural gasoline association meeting. He told the industry that his company had patents covering the stabilized product.

When he came back to the convention a year later Mr. Rafferty told the manufacturers a story which was not funny—to him:

"There was a colored gentleman in Arkansas who had just been found guilty of grand larceny," Mr. Rafferty said. "The judge, calling the negro up before the bench, told him that he was about to sentence him to imprisonment in the state penitentary at hard labor for eight years.

" 'Is there anything you would like to say for yourself before I pass sentence?' the judge asked.

" 'Jedge,' the negro said, 'All I have to say is that you-all white folks is mighty darn liberal with other folkses time.'

"The moral of this little tale," Mr. Rafferty told the gasoline manufacturers, "might be summed up in our idea that some of you folks are mighty darn liberal with other people's ideas."

Liberal or not, they got away with it. The attempt to patent stabilized natural gasoline was knocked out by the courts. The industry didn't generally use the Carbide and Carbon Chemicals process. It developed a high pressure, high temperature method instead of the one first devised in West Virginia.

★ ★ ★

Today the natural gasoline industry may well be entering a new era as it did with stabilization and propane-free gasoline 15 years ago. Application of polymerization to the processing of propane and butane at the gasoline plant may be the beginning.

What will the next step be? Will the rich supply of hydrogen in the residue gas be utilized commercially to help produce exactly the type of motor fuel that the engine of the future can use to the best advantage?

Yours Truly

J. C. Chatfield

Managing Editor,
Refining Technology Edition.

Thermal Poly Process Adapted To Small Gasoline Plant

ABSTRACT

A small thermal polymerization plant has been in operation in the field for many months producing about 17,000 gallons of poly gasoline from 40,000 gallons daily of butane charged to the unit. This small plant designed for installation at natural gasoline plants is compared with the large refinery units such as the 8,000 barrel Humble plant at Baytown and the 2500 barrel Phillips plant at Borger, Texas. General cost and yield figures are given for each type of plant.

THREE types of thermal polymerization plants were described in a joint paper prepared by Humble Oil & Refining Co., Phillips Petroleum Co., and The M. W. Kellogg Co., for the 18th annual convention of the Natural Gasoline Association of America. In each case the economics of operation were given. The paper was read by D. W. Wilson of the Kellogg company.

In each of the three plants the essential units of the process are the polymerization unit proper, rerunning and treating, and recovery. Dependent upon local conditions, many modifications in actual design are possible but it is worthwhile to mention that, if economic, the recovery unit may be either omitted completely or used in part only. Also, in some instances, existing equipment or other considerations will permit elimination of the treating unit and of the rerun unit.

The extremely large Humble plant with a capacity of 8000 barrels per day of butane feed stock has been designed with a substantially complete and relatively expensive system for the recovery of propane. Owing to its location in a large refinery, the polymer gasoline is not produced as a single stream but is separated into a light and heavy product. The fact that feed stock is relatively valuable is another factor tending to justify complete and expensive equipment. Butane and propane are transported from the East Texas field to Baytown by pipeline.

The Phillips plant at Borger is in the heart of a natural gasoline producing field. Operations there illustrate a smaller plant. The recovery system, as an independent unit, is completely omitted and use is made only of that recovery which results from employing water and a de-ethanizer pressure of 800 pounds.

Of most immediate interest to natural gasoline manufacturers is the small plant adaptable to existing operations. Such operation illustrated by the description of a plant in which 17,000 gallons per day of 10-pound Reid vapor pressure 400 degrees end-point poly gasoline are produced from 40,000 gallons of butane charge.

Various design modifications are available to suit existing plant facilities, feed stocks, and capacity requirements. The useful feed stocks of the polymerization unit are recovered from either refinery gas or field gases and consist essentially of propanes, propylenes, butylenes, iso-butanes and normal butanes or a mixture of these. The feed stocks are produced from the gases in the conventional way, either by absorption, redistillation and fractionation of the desirable fraction, or by low temperature recovery. The former is the most often used method in casinghead plants and produces the desired fraction generally as an overhead liquid product from the stabilizer.

The low temperature recovery system produces the desired fraction from the field gases by fractionation at a suitable temperature and pressure. The feed stocks are considered as a liquid mixture of the aforementioned hydrocarbons and may contain small percentages of methane and ethane, which as far as the process is concerned, are inert materials discarded in the residue gas.

The value of feed stocks, with respect to yields from the process viewpoint, depends on their composition. For commercial operation in the case of saturated feed stocks, normal butane is the most valuable, while iso-butane ranks second and propane third. For all practical purposes, ethane is considered to be an inert material. In the case of refinery gases the unsaturates, such as propylenes and butylenes are of the greatest value with ultimate yields as high as 83 per cent by weight. In addition to the foregoing valuations, under the same condition of pressure the ultimate yield of liquid polymer decreases with an increase of crack per pass. The crack per pass is taken as the weight of 10-pound RVP liquid polymer divided by the weight of furnace charge per unit of time. The ultimate yield is taken as the weight of 10-pound RVP liquid polymer divided by the weight of net fresh feed per unit of time. Table I presents the ultimate yield of 10-pound RVP liquid polymer at various cracks per pass for propane and butane, operating with total recovery and recycling of propane and heavier.

Table I

Propane			
Crack per pass wt., per cent	5	7	9
Ultimate yield of 10-pound RVP polymer wt., per cent	51.7	50.0	48.2
Normal Butane			
Crack per pass wt., per cent	8	12	16
Ultimate yield of 10-pound RVP	67.6	61.4	55.2

The recovery of feed stocks from the residue gases is a distinct and separate operation merely to enhance the economic features of the polymerization plant. The recovery may be accomplished at low temperatures whereby all the butanes and a large part of its propanes are recovered from the residue gas and recycled to the process, or the recovery may be partially accomplished by cooling with water. For commercial operation, the degree of recovery of these feed stocks from the residue gas depends on the cost of recovery of the feed stock compared with the cost of fresh feed stocks, giving proper consideration to their respective yields of polymer liquid. Therefore, in casinghead plants where the value of the feed stocks is low, only partial recovery of feed stock from the residue gas is warranted. In cases where the residue gas from the polymerization unit may be recycled in the existing absorption plant,

operation with recovery by cooling with water becomes economical.

In addition to the decrease of yield with a higher crack per pass the ratio of heavy polymer production with respect to the light polymer with 400 degrees Fahr. EP is increased. This increased production of the fraction boiling above 400 degrees Fahr. at various cracks per pass is presented in the following table:

Table II

Heavy Polymer Production
(Fraction boiling above 400° F.)

Crack per pass wt., per cent	4	6	8	10	12	14	16
Heavy Polymer wt., per cent	0.3	2.1	4.1	6.0	8.0	9.9	11.9

From the foregoing it can readily be seen that the crack per pass is of major influence on the design of the plant, as for a lower crack per pass the gain in yield of 400 degrees Fahr. EP gasoline does not offset the increase of furnace throughput with consequent increase of the size of the furnace, the stabilizing unit and the recovery system. In practice, however, it has been found that the crack per pass is also a major influence on the length of the run that can be obtained, and in general, it may be said that the lower crack per pass lengthens the run while the higher crack per pass has the opposite effect.

At the higher crack per pass it has been found necessary to inject a heavy quench oil at a suitable point in the transfer line to retard the deposit of coke in the transfer line economizers and obtain a run of commercial duration. It is for this reason that polymerization units operating in connection with refineries are designed and operated at a high crack per pass as facilities for quenching with heavy oil are available while in the case of a polymerization unit operated in connection with a casinghead plant, the design is based on a low crack per pass, thus lengthening run, increasing yields, and reducing operating difficulties.

In the processing of propanes and butanes for the production of polymer liquid, the greater refractoriness of propane compared with normal butane requires almost four times as large a furnace soaking volume, which necessarily results in a greatly increased furnace cost. The following examples illustrate the required soaking volume for propane and butane:

Table III

	Propane	Normal Butane
Crack per pass Wt. %	5	8
Temperature °F.	1030	1030
Pressure lbs./sq. in.	1600	1600
Feed quantity in lbs.	100	100
10 lb. RVP poly. liquid in lbs.	51.7	67.6
Ultimate yield Wt. %	51.7	67.6
Feed quantity in gallons	23.5	20.5
10 lb. RVP poly. liquid in gallons	8.5	11.0
Ultimate yield volume %	36.2	53.7
Furnace soaking volume cu. ft.	5.21	1.36

The foregoing shows that for the mentioned conditions of pressure and temperature, the required soaking volume for the processing of 100 pounds of propane is 3.83 times as great as for 100 pounds of butane. Furthermore the soaking volume is independent of the crack per pass, and commercial operation with a propane feed stock has to be conducted at a considerably lower crack per pass than commercial operation with butane feed stock. This required operation with a lower crack per pass results in an increased plant cost, due to increase of size of equipment throughout.

The characteristics of the clay treated 400 degrees Fahr. EP poly gasoline are shown in the following inspections:

Table IV

Clay treated poly gasoline	
Gravity °API	62—63°
IPB °F.	84
5%	106
10	122
20	148
50	190
90	320
E. P.	400
Oct. No.	
A. S. T. M. clear	78
RVP lbs.	10
*Cu-gum mg/100 cc.	2—20

*The reduction in gum content is dependent upon the extent of the clay treatment.

Contents...

REFINING TECHNOLOGY

May 17, 1939

Thermal polymerization now is being applied in small scale plants built in connection with natural gasoline plants in the field as well as at large refineries. High octane poly gasoline is being produced from liquefied gases. D. W. Wilson of the M. W. Kellogg Co. read a paper before the Natural Gasoline Association which describes this type plant and compares it with larger scale plants such as the Baytown plant of Humble Oil & Refining Co. and the Borger refinery of Phillips Petroleum Co. R-194

The E. I. Hanlon award for outstanding service to the natural gasoline industry was awarded to George G. Oberfell of Phillips Petroleum Co. at the annual meeting of the Natural Gasoline Association of America at Tulsa. Mr. Oberfell has developed manufacturing processes and increased markets for natural gasoline and its by-products R-203

Previously proposed laboratory methods for indicating road performance of motor fuels are criticised as omitting the time element in loading the engine and picking up speed. Two years of experience with a 2550-pound flywheel loading shows a reproducibility of plus or minus one octane number in determining motor fuel ratings on three automobile test engines while accelerating. Wider differences in road test ratings are attributed to mechanical differences rather than to fuel quality differences. Herschel G. Smith reports his experiments to the A.P.I. mid-year meeting R-207

A never ending battle with corrosion is fought by refiners. Dodging the high cost of steel alloys that are effective in preventing corrosion has been accomplished by surfacing lower cost steels with the more expensive alloys. An A.P.I. symposium on the subject covers present successful applications of plug-welded sheet linings and metallized surfaces R-211

Pressure vessels with laminated walls built up from 1/4-inch or thicker plates to necessary thickness have been developing in size and applications since 1931 when the first multi-layer pressure vessel was put in service. This type of construction gives a wide flexibility with which present limits of size and weight in the construction of thick single-piece equipment can be overcome. T. McLean Jasper reports to the Mid-year A.P.I. meeting R-216

Stainless and other special alloy steels now are being utilized in many ways in the refinery. K. E. Luger of the stainless Steel Division of Carnegie-Illinois Steel Corp. reviews these uses in a paper which he presented before the Oil World Exposition at Houston R-221

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The composition of the residue gas depends on the operation of the polymerization unit and consists of actual gas produced by the polymerization process, the small amount of ethane and methane from the fresh feed and an additional amount of propane and butane required to reach equilibrium at the condition of pressure and temperature at the point of exit of the process.

The average gravity of the residue gas in a plant operating with recovery by water cooling is approximately 1.00 compared with air, and the gross heating value is approximately 1650 B.t.u./cu.ft.

Operation of Polymerization Plants

The duties involved in the operation of a polymerization plant depend to a large extent upon its size and upon the design of the unit with respect to low temperature recovery system, quench oil system, number of furnace charge streams with necessary controls, size of furnace, number of towers, reflux pumps and additional equipment. In small size units in connection with a casinghead plant the design is simplified to a single coil furnace, towers with internal reflux condensers and operation without low temperature recovery system, which reduces the operating duties to a minimum.

The following presentation describes chiefly the operation, maintenance and shutdown duties of relatively small installations and at natural gasoline plants. While it is not possible to make rigid statements as to the minimum quantity of feed stock which might economically be considered, this minimum size will depend upon:

(1) Value of available feed stock.

(2) Proportions of propane and butane in feed.

(3) Value of products.

(4) Utility and labor considerations, as well as other special local conditions.

Production of such a small plant may be 400 barrels per day of 10-pounds R.V.P. poly gasoline, and requiring the supply as liquid feed of 40,000 gallons per day of butane. This specific case is predicated upon processing only the butanes. While the liquid feed stock may contain considerable percentages of propane, some ethane and traces of methane, the plant is designed in such fashion that no appreciable product is formed from any part of the feed except the butane.

Chart I illustrating this small plant shows (1) elimination of all recovery except that resulting from use of cooling water, and (2) elimination of all treating and rerunning equipment. It is apparent that this is a highly simplified and inexpensive design, well adapted to small capacity units. Obviously, the liquid product may not be gasoline, since all the liquid produced by the process is included in it. This poly liquid may be further refined in existing equipment, or if economic, it may be disposed of in crude, where circumstances permit. It seems probable

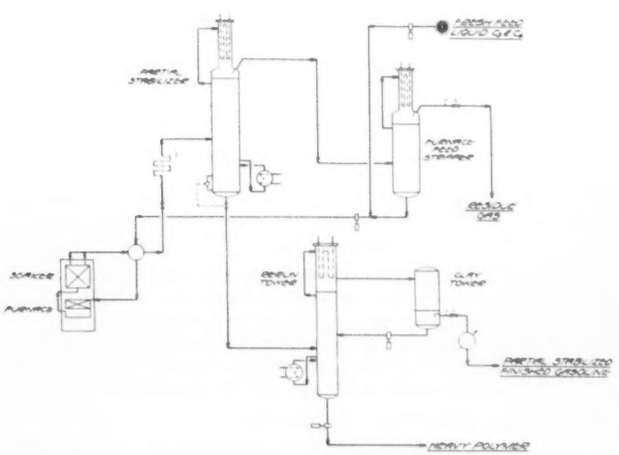
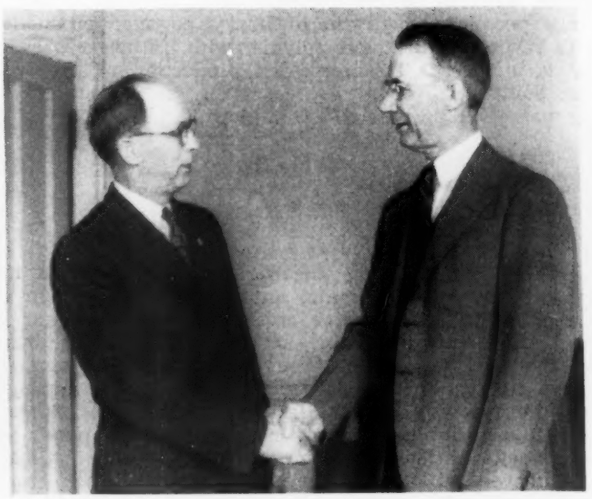


Chart I—Small thermal polymerization unit operated in a natural gasoline plant. This is a highly simplified and inexpensive design, well adapted to small capacity units. The liquid product may not be all gasoline



There are two cronies who always get together at the N.G.A.A. Here they are greeting one another. At the left is C. E. Brock, vice president of the Kansas Power & Light Co., Salina, Kans., and J. W. Cowles of the Shell Oil Co., Inc., Tulsa, and holder of the Hanlon Award for 1938

that natural gasoline plant installations would need a treating and rerunning operation as shown on the chart. A rerun tower and vapor phase clay treatment have been added as a part of the plant.

The residue gas from the plant contains a considerable amount of propane and some butane. In many casinghead plants it would be highly economic to pass this residue gas through existing absorbers or other recovery equipment, thereby returning in the feed stream to the unit considerable parts of the propane and butane discarded from the polymerization unit proper. Obviously, the recovery to be employed in respect to this residue gas will depend upon the local situation at the natural gasoline plant. The quantity of fresh feed given above contemplates that at the casinghead plant some propane and butane would be recovered and returned to the poly unit.

The partially stabilized gasoline produced from this unit as designed would have a vapor pressure of approximately 35-40 pounds; consequently, this material contains considerable excess butane and small amounts of propane. This product may be processed in one of two ways:

(1) It may be charged to an existing stabilizer at the casinghead plant. In this manner the gasoline product will consist of a mixture of thermal polymerization gasoline and of casinghead. Operating in this fashion permits the sale of that additional butane which is used to increase the pressure of the thermal poly gasoline from 10 pound Reid to the desired finished vapor pressure. In other words, the capacity of 400 barrels per day for this unit is predicated upon production of 10-pound RVP and this capacity is increased by whatever added butane is used for any higher vapor pressure. For example, at 26-pound RVP, an additional 200 barrels per day of butane is made available for sale.

(2) If the quality of the thermal polymerization gasoline, as contrasted with the natural gasoline is sufficient to warrant it, an additional small stabilizer may be employed. In this case the thermal polymerization gasoline is produced as a separate product and obviously may be made of any desired vapor pressure. The plant design given here does not include the individual stabilizing equipment for the thermal polymerization gasoline.

Fresh feed quantity and plant capacity are predicted on the assumption that the excess butane and propane in

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One of the most interesting papers at the eighteenth annual convention of the Natural Gasoline Assn. of America in Tulsa recently was given by F. B. Mack of the Shamrock Oil & Gas Co., Amarillo, Tex. Subject of his paper was "Economics of Catalytic Polymerization of Natural Butanes"

the product, above that required for 10-pound RVP, shall be returned to the poly unit in liquid form.

For this plant, as outlined, the utility requirements are approximately as follows:

Steam (175 lb. pressure) ...	4500 lb/hr.
Water (Max. temp. 85°F.)	3000 GPM
Fuel gas	1,300,000 cu. ft./day
Electricity	15 K. W. (Lighting only)

This plant design assumes that fuel gas will have very low value and that electricity is either expensive or not available in considerable quantity; consequently, an effort has been made to use no electrically driven equipment, and to minimize steam requirements. Gas is used for power purposes wherever possible. Fuel gas quantity given above does not include that required to produce necessary steam, but does include all other uses of fuel oil.

The products from this plant are:

(1) Gasoline
(2) Gas and fuel oil
(3) Residue gas

The properties of gasoline, if produced as 10 pound RVP, have been completely given earlier. It is expected that gas and fuel oil will be produced in the amount of about 650 gallons per day and that this will include all material having a higher boiling point than 400 EP. Its gravity will be 18-20 degrees API. Residue gas from the plant will amount to approximately 1,900,000 cu. ft. per day and is produced at 500 pounds pressure.

Installation costs of a plant of this capacity and this design will vary markedly from one location to another. It is expected, however, that the plant capital cost, exclusive of royalty, will lie between $600 and $700 per daily barrel of 10-pound RVP product.

From previous discussion it is evident that economics for this case will depend very largely upon the value of feed stock and the value of the product produced. The plant is extremely simple in its design and, based upon experiences previously outlined, it is felt that not more than two operators per shift would be required for it. It is difficult to give economic statements which will have general applicability, but Table V shows what may be expected at many casinghead plants.

Table V

Polymerization Unit at Natural Gasoline Plant

Gross fresh feed, gallons butane per operating day 40,000
10 lb. RVP 400° E. P. gallons per operating day 17,000

	Cents per gallon				
Value of 10-lb. RVP 400 E. P. gasoline	4	4.5	5.0	5.5	6.0
Value of butane	0.36	0.57	0.78	1.00	1.21

Table V data based on the following: (a) 90% time efficiency; (b) Two operators per shift; (c) Utilities as given above; (d) No charge or credit for fuel gas or residue gas; (e) Capital pay-off, including royalty, of three years; (f) No credit for gas oil or fuel oil produced.

Table V is intended as a general guide only, but it was prepared on a conservative basis, and it is believed that in many cases more favorable results might be obtained. It is however, evident that the profits obtainable from the process are very sensitive to the value of the gasoline produced. In some cases, better financial results are available if the poly gasoline be mixed with the casinghead and sold in that manner. This requires additional butane to increase the vapor pressure, but obviously, all of this additional butane becomes, without any processing cost, salable at the price of casinghead.

If greater capacity than that given in Table V be considered, better economics result, and conversely, lesser capacities are less favorable. In all cases local conditions are of utmost importance. If mixtures of butane and propane are processed, capital and operating costs will increase. The decision as to whether profit will result from handling mixtures of propane and butane can only be arrived at after study of each specific case. In particular cases, it has been found that processing a part of the propane available is definitely attractive economically.

Baytown Unit

The principal feature of the thermal polymerization unit at Baytown are shown in Chart II. The fresh feed stock is either introduced in the furnace feed stripper or at the inlet of the furnace charge pump. The furnace charge material consists of the recycle material, essentially free from ethane and methane, and the fresh feed stock. The furnace charge is preheated by counter current heat exchange against the furnace outlet streams.

The flow through the main part of the furnace is in four parallel paths, each designed to perform the same duty. Each of these four paths in the radiant sections is

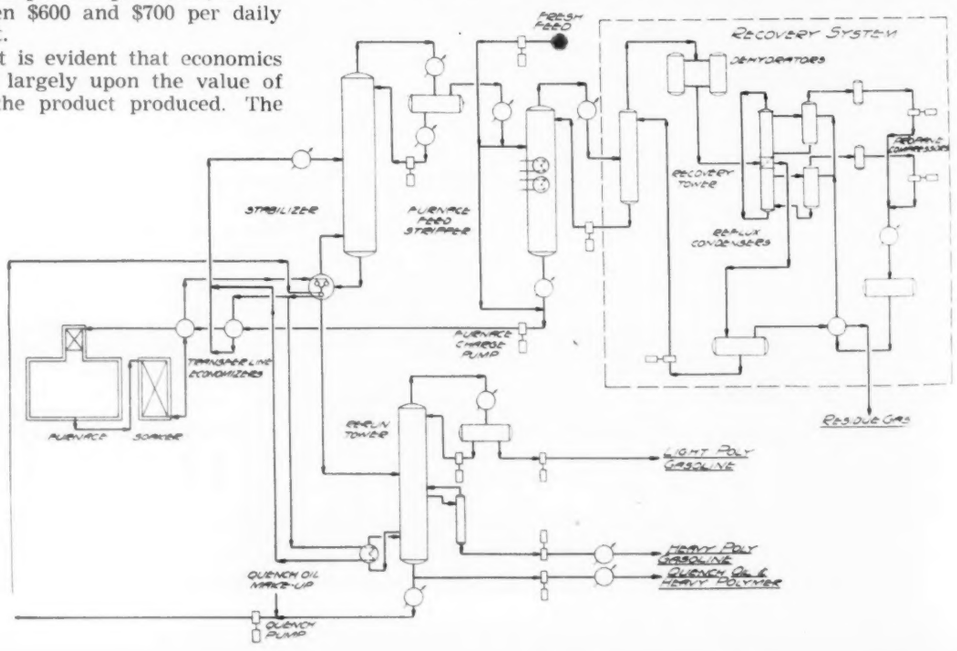
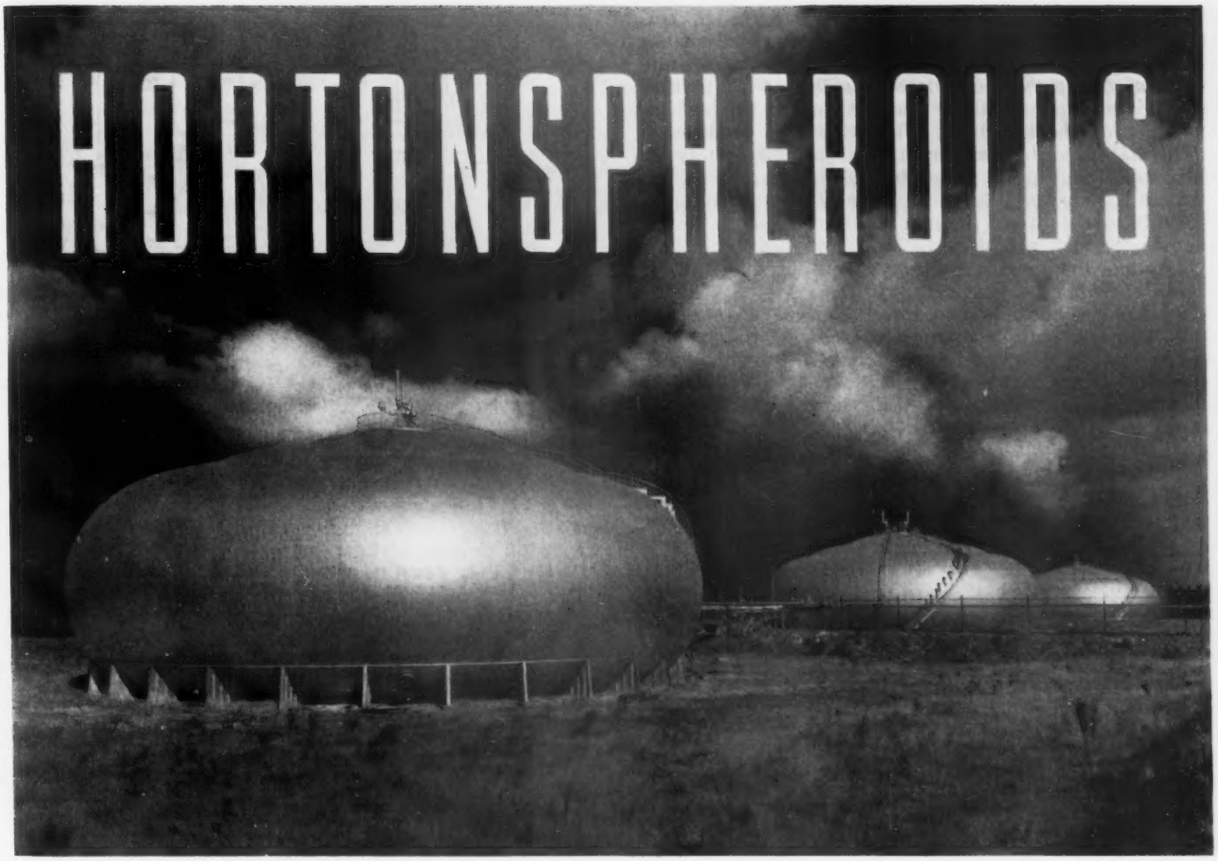


Chart II—Simplified flow chart of Humble's thermal polymerization plant. The plant was designed with a complete and relatively expensive system for recovery of propane. Polymer gasoline is separated into a light and heavy product



for Natural Gasoline Storage

ILLUSTRATED above are three of six 80,000-bbl. Hortonspheroids which have been placed in service recently for natural gasoline storage at a large Gulf Coast refinery. Two of them are designed for a maximum pressure of 15 lbs. per sq. in., and the other four are for 10 lbs. per sq. in.

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Tulsa	1607 Hunt Bldg.	Detroit	1513 Lafayette Bldg.	Los Angeles	1422 Wm. Fox Bldg.
New York	3345—165 Broadway Bldg.	Birmingham	1534 North 50th Street	Boston	1516 Consolidated Gas Bldg.

made up of passes of two tubes in parallel using four-way type header boxes. On entering the soaking section, each stream is divided, making eight parallel paths in this section. The partially cracked and polymerized soaker outlet streams after being cooled by heat transfer and by addition of heavy recirculated quench oil is further cooled by water to control the temperature of this stream at the inlet of the stabilizer. This stabilizer produces a partially stabilized bottom product of approximately 30 to 35 pounds Reid vapor pressure, and an overhead product which is substantially free from pentane. The partially stabilized bottom product is introduced into the rerun tower, which produces as liquid overhead the light poly gasoline and excess butane. This product is debutanized elsewhere in the refinery.

The side cut of the rerun tower consists of a heavy naphtha and the bottom product consists of the quench oil and the heavy polymer. A portion of the rerun tower bottoms is recirculated and fresh quench oil added as required. The overhead product from the stabilizer is joined by the fresh feed and enters the furnace feed stripper, where a split is made between the furnace feed material and the lighter fractions. The overhead product from this tower is introduced into the low temperature recovery system where all of the butanes and a portion of the propanes are recovered by fractionation at low temperatures and returned to the furnace feed stripper. The uncondensed vapors leaving the refrigerated partial condensers of the recovery system form the residue gas from the unit and are discharged into the refinery fuel system.

Typical operating conditions are listed in the following table:

Table VI

Operating Conditions of Baytown Unit

Quantities:		
Gross fresh feed BPD	6,000——	9,500
Furnace charge BPD	28,000——	35,000
10 lb. RVP 400 EP poly gasoline BPD	2,600——	3,250
Gas, oil and tar BPD	140——	250
Residue gas cu. ft. per day	7,000,000——	15,000,000
Temperatures and Pressures:		
Furnace Inlet Stream	**Temperature Deg. F.**	**Pressure Lbs./Sq. In.**
Furnace charge pump discharge	140	1950
Furnace inlet	600— 620	.....
Furnace Outlet Stream		
Radiant section outlet	1000—1030	.....
Soaking section outlet	1010—1040	1700
Outlet transfer line exchangers	325— 400	1000—1200
Primary Tower		
Feed inlet	250— 300	.....
Top	190— 210	360— 400
Reboilers	350— 400	360— 400
Gasoline Tower		
Top	165	20
Bottom	350— 450	20
Furnace Feed Stripper		
Top	135	340— 380
Reboilers	200— 210	340— 380
Recovery Tower		
Top	58— 70	320— 360
Bottoms	85— 90	320— 360
Reflux	7— 30	320— 360

Economics of Baytown Unit

In Table VII are given economic statements for this plant operating at three capacities, namely, 6000 barrels, 8000 barrels, and 9500 barrels per stream day of saturated butane charge. All costs, charges and credits are in accordance with the accounting methods used by the Humble Oil and Refining Co. Therefore, the figures must be considered as applicable only to this particular case. At Baytown the most economic capacity is around 8000 barrels per day of butane charge, since below this figure, many operating charges which are constant per day, substantially irrespective of charge rate, increase the unit cost of product, and since above this figure residue gas losses increase to the extent that butane charge is converted to fuel and again costs per unit product increase. The following comments regarding Table VII should be borne in mind:

(a) Butane values are in the feed tanks of the poly unit and therefore include costs involved in the gathering system and in transportation from the field to Baytown.

(b) Values are based on a 10.5 year write-off of capital cost. With other things constant, a more rapid capital write-off decreases the value of butane.

(c) Poly gasoline value is taken at 6 cents per gallon. This value will vary widely from one location to another. At Baytown, if gasoline be taken at 5 cents per gallon, butane value becomes—for 8000 barrels, per day of butane charge—1.25 cents per gallon, and correspondingly, at 6 cents per gallon for gasoline, the butane value is 1.615 cents per gallon. From these figures it is clear that the value of butane is extremely sensitive to price changes in gasoline.

(d) Values of fuel gas, gas oil, tar, and naphtha bottoms from rerunning are taken at the local Baytown refinery values.

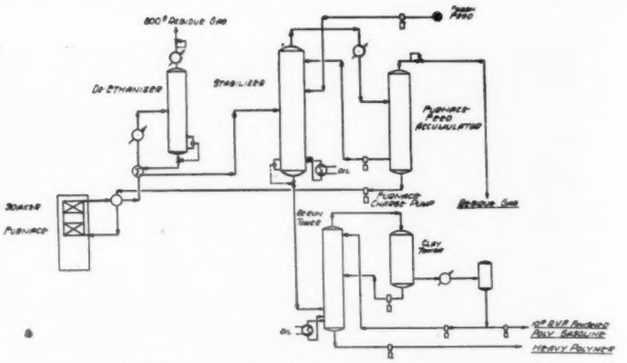

Chart III—Simplified flow chart of a thermal polymerization plant in Phillip's Borger refinery. A separate recovery system is unnecessary. Use is made only of that recovery which results from employing water and a de-ethanizer pressure of 800 pounds

Table VII

General Economics of Baytown Unit

Gross fresh feed (saturated field butanes) BSD (1)	**6000**	**8000**	**9500**
Furnace charge rate BSD	34,000	34,000	34,000
Gross fresh feed (saturated field butanes) BCD	5,100	6,800	8,075
10 lb. RVP 400° F., E. P. Poly gasoline BCD (2)	2,200	2,572	2,735
Heavy polymer above 400° F., E. P.	115	182	212
Fuel gas produced MM B.t.u./CD	8,600	13,200	17,700
COST—DOLLARS PER CALENDAR DAY			
Salaries & Wages	$ 236	$ 236	$ 236
Maintenance & repairs & other materials	430	430	430
Utilities—ex fuel	74	74	74
Total—ex fuel	$ 740	$ 740	$ 740
Fuel—direct & in utilities @ 8c/MM Btu	451	451	451
Overhead, fixed charges, taxes depreciation (3)	1,661	1,683	1,693
TOTAL COST PER CALENDAR DAY	$2,852	$2,874	$2,884
CREDIT—DOLLARS PER CALENDAR DAY			
Fuel gas	$ 688	$1,056	$1,416
Liquid by-products	156	225	255
400° F., E. P. Poly Gasoline @ 6.0c/gal.	5,310	6,220	6,615
TOTAL PRODUCT CREDIT	$6,154	$7,501	$8,286
Finished polymer gasoline B/CD	2,108	2,465	2,621
No-profit cost field butane $/CD	3,302	4,627	5,402
Butane charge-gallons/cal. day	214,000	286,500	339,000
No-profit value butane-c/gal. (4)	1.545	1.615	1.595

(1) All barrels as 42's.
(2) Unfinished.
(3) Depreciation based on 10.5 yr. payout; item also includes polymer gasoline finishing.
(4) In poly plant feed tanks.

Borger Unit

The principal features of the Phillips Petroleum Co. thermal polymerization unit at Borger are shown on the flow diagram, Chart III. The fresh feed stock is introduced into the side of the stabilizer to drop out pentanes and heavier accidentally carried in the fresh feed. The butane and lighter are carried overhead with the recycle stock into the furnace feed accumulator. The furnace charge is pre-heated by con-current and counter-current exchange against the furnace outlet stream. The flow through the furnace is single pass—first through the radiant section, then con-current through the convection section for soak-

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Sulfuric Acid Alkylation has been released to the refining industry under the patents of Texaco Development Corporation, Shell Development Company, Standard Oil Development Company, and Anglo-Iranian Oil Company.

Foster Wheeler will contract with licensees under the above patents for complete Alkylation plant including the economic studies, estimates, designs, fabrication and construction under a single contract and with undivided responsibility.

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ing. The transfer line then leaves the furnace through the above mentioned exchangers after which the pressure is released and the material continues through a set of reboiler exchangers, a set of tower feed exchangers, and a water cooling section into the de-ethanizing tower. The de-ethanized bottoms pass through the tower feed exchangers into the side of the stabilizer. The recycle material passes overhead with the fresh feed stock where it is condensed and used as reflux on the tower, and the heavy polymer drops to the bottom. The bottom of this tower is reboiled in the economizer section of the furnace.

It will be noted that no low temperature recovery system is employed, recovery being limited to that obtained by cooling water temperatures and a pressure of 800 pounds on the de-ethanizer.

Typical operating conditions are listed in the following table:

Table VIII
Operating Conditions of Borger Unit

Quantities:		
Gross fresh feed BPD		2,500
Furnace charge BPD		9,000
10 lb. RVP 400 E. P. poly gasoline BPD		875
Gas, oil and tar		75
Residue gas cu. ft. per day		2,300,000
Temperatures and Pressures:		
Furnace inlet stream	**Temperature Deg. F.**	**Pressure Lbs./Sq. In.**
Furnace charge pump discharge	100	2400
Furnace inlet	550	....
Furnace outlet stream		
Radiant section outlet	1030	....
Soaking section	1025	1850
Outlet transfer line exchangers	675	1800
De-ethanizer		
Feed inlet	225—240	800
Top	130—150	....
Stabilizer tower		
Feed inlet	350	275—300
Top	175—190	....
Reboiler	395—425	....
Gasoline tower		
Top	390—420	25
Bottom	595	....
Furnace feed accumulator	100	275—300

Table IX gives the economics of the Borger operations. These figures have been prepared from information from the Phillips Petroleum Co., and consequently, are of value only as applied to this particular situation. Although the records do not segregate overhead, fixed charges, taxes and depreciation to the separate parts of the refinery, an equitable approximation for such charges at normal rates has been made. The no-profit value of butane after all charges, including this allocation, of .602 cents per gallon is substantially the true net value at Borger. It is not possible to compare the Baytown and Borger economics since accounting methods and value of gasoline differs so widely. Qualitatively, it is evident that butane has much lower value at Borger than at Baytown—this being true because of the value of 6 cents per gallon for poly gasoline at Baytown, as against 5 cents at Borger. Also economics differ at these two plants since at Baytown fuel gas is given a value of 8 cents per M.M. B.t.u. while at Borger this has a value of only 2 cents per M. cu. ft.

Table IX

General Economics of Borger Unit

Gross fresh feed—Bbls./stream day	2,500
Furnace charge rate B. S. D.	9,000
Gross fresh feed—Bbls./calendar day	2,375
10-lb. RVP poly gasoline BCD	832
Heavy polymer—(F. O.) BCD	71
Surplus fuel gas M cu. ft. calendar day	760
Cost—Dollars Per Calendar Day	
Labor (operating, maintenance, cleanout)	$ 112.00
Utilities (ex fuel)	32.00
Supplies and material	66.00
Service units	200.00
Total cost per calendar day (ex overhead, fixed charges, taxes, depreciation)	$ 410.00
Credit—Dollars Per Calendar Day	
Surplus fuel gas @ $.02 per M.	$ 15.00
Fuel oil (heavy polymer)	45.00
Gasoline @ $.05 per gal.	1,680.00
Total product credit	$1,740.00
Net butane value operating basis—Dollars per calendar day	$1,330.00
Allocated—overhead, fixed charges, taxes, depreciation (3-year basis)—Dollars per calendar day	729.00
Net value of butane after operating charges—Dollars per calendar day	601.00
Gallons butane per calendar day	99,750
No profit value of butane,—cents per gallon	0.602

British Diesel-Powered Train

The first diesel-powered train was recently put into service by the L. M. S. Railway between London and Nottingham, according to *The Petroleum Times* (London). It is a three-car articulated train, carrying 162 passengers, and powered by six Leyland diesel engines, each of 125 horsepower at 2200 revolutions per minute. It is capable of 75 miles per hour and will make one run of 19.6 miles between two small towns en route in 20 minutes as a regular schedule.

If the results of this experiment are successful, it is expected that British railways will apply diesels more widely to regular rail service. One of the reasons given for the slowness of adoption of diesel railway power in England has been the fear of offending the coal interests, it is claimed. The Great Western Railway has found diesel cars to be more economical to operate than steam trains. If diesel fuels are made from coal in, for example, hydrogenation or low-temperature carbonization plants, this objection to using power which does not burn British coal will be eliminated.

Oil Shale Bulletin

Studies of properties of oil shale and shale oil covering work completed by the Bureau of Mines between 1923 and 1932 have been compiled by Boyd Guthrie, Bartlesville station, and published as Bulletin 415. Both previously published and unpublished articles are included.

The bulletin has been published in response to requests for reports that are out of print and to add information not heretofore published. Included are the contents of Bull. 249, R. I. 2456, R. I. 2603, R. I. 2588, R. I. 2758, R. I. 2832, and three unpublished manuscripts.

The bulletin is available from the Superintendent of Documents, Washington, D C. for 25 cents (paper cover).

Low Temperature Alloys

A round-table discussion on the effect of subatmospheric temperatures on the properties of metals is one of the features of the forty-second annual meeting of the American Society for Testing Materials in Atlantic City, June 26 to 30. The need for evaluating and summarizing present knowledge has been recognized by the Joint ASTM-ASME Research Committee. The round-table is being developed under the direction of F. B. Foley, Midvale Co., for the committee of which N. L. Mochel, Westinghouse Electric & Mfg. Co., is chairman.

Increases Capacity

Republic Oil Refining Co. is increasing the cracking capacity of its Texas City plant 40% under an extension of its cracking license with Gasoline Products Co., Inc. Republic took out its first license with Gasoline Products on June 1, 1937.

Egloff at Houston

"Oil Industry Going Catalytic" is the subject of a paper presented by Dr. Gustav Egloff, director of research of Universal Oil Products Company, on April 28, at the Oilworld Exposition at Houston. On the following day Dr. Egloff addressed the Wichita, Kansas, section of the American Chemical Society on "Catalytic Reactions in Petroleum Refining."

Dr. Donald J. Bergman, Chief Engineer, Universal Oil Products Co., was a speaker in the program of the Oil World Exposition at Houston, April 26. His subject was, "Modern Instrumentation for Topping, Cracking and Polymerization Plants."

An Interview . . .

With An Ohio Farmer Boy Who Didn't Want to Be A School Teacher

By Allen S. James
N. P. N. Staff Writer

"George Grover Oberfell, will you please come up to the speaker's platform?"

As the presiding officer finished the sentence, a tall, well-proportioned man rose from his seat in the audience at one of the sessions of the Natural Gasoline Assn. of America's convention in Tulsa early in May.

He walked to the front of the room and onto the platform as the audience applauded, and, turning to face that audience, brushed an errant forelock into place where it remained all of two seconds.

There, before the men of an industry his genius had done so much to develop, this self-made son of an Ohio farmer was given the 1939 Hanlon award for meritorious service to the natural gasoline industry.

Thus did the association representing an industry to which George Oberfell has devoted most of his scientific life pay the highest honor in its power to the man who for more than 20 years has been one of the foremost natural gas and natural gasoline technicians in the world.

For many years now George Oberfell has been the vice president in charge of the research program for a company whose contributions to the technology of refining, natural gasoline manufacturing and producing have been outstanding.

It was only 15 years ago that George was the whole research department of the Phillips Petroleum Co. at Bartlesville, Okla. Today his department is housed in one of the most modern laboratory buildings in the world. His staff numbers close to 150.

Oberfell wears his vice presidencey as unpretentiously as a plant operator does his overalls. The men who have worked with and for him for many years still know him as the friendly, warm hearted individual he always has been, quick to praise his fellow man, to speak kindly of him; always giving his fellow workers the credit for research achievements.

He's still a man's man. Back in the past somewhere George acquired a liking for the same kind of weed Sir Walter Raleigh is credited with introducing to the British. That liking in later years has been repressed by the executive, George Oberfell. But let him get out on a field trip, and about the first thing he'll say is, "Somebody gimme a chew."

Oberfell does not say much about his boyhood days, but his friends say that about the turn of the century he was a large-boned, somewhat awkward youth whose vision even then extended far beyond the end of the corn rows he had to work. That lad wanted a college education. He wanted it so badly he set his sights and held on his mark with grim determination.

There were members of the family who thought it was all right for a farmer's son to finish high school, but who frowned on a college education. There were other members of the famiily who saw eye-to-eye with young George Oberfell and kept that desire aflame in spite of the cold water tossed on it.

George Oberfell looks at the fine new watch he received as part of the Hanlon Award

The farmer's son finished high school and then taught for a few years in the Butler county, Ohio, schools. He saved his money. Then with the aid of others he worked and studied his way through Miami University, being given a bachelor's degree in 1910.

For two years after graduation Oberfell taught chemistry at Miami university. Then he decided he was not "cut out" for school teaching. He looked around for an opening that would lead to the industrial world he wanted to enter.

He obtained a position as junior chemist with the Bureau of Mines at Pittsburgh, Pa. There he was assigned to problems related to by-products of the natural gas industry.

George Oberfell had found his career.

The World war interrupted the work George was doing with the Bureau, but not before he had participated in numerous investigations which resulted in publications of considerable value to the very young and inexperienced, but exceedingly lusty, natural gasoline industry.

This young junior chemist was assigned to the Chemical Warfare Service during the war, and was given the rank of captain. Due to his previous experience with gases he was assigned to work on the problem of defense against poisonous gases.

While experimenting with activated charcoal used in

gas masks, a group of these soldier-chemists conceived the idea that the charcoal could be used successfully in the extraction of natural gasoline from natural gas.

So interested had this chemist-soldier become in the natural gasoline industry by the time the war ended that he kept working on some of the problems with which he had become familiar. This led George in 1920 to the former Chestnut & Smith Corp. of Tulsa, then the largest manufacturer of natural gasoline in the world. Oberfell was employed as the company's research engineer.

It may be interesting to note here that at that time E. I. Hanlon, donor of the Hanlon Award, was executive vice president of Chestnut & Smith. In accepting the 1939 award Oberfell said that he felt that no one deserved more than did Ed Hanlon the Hanlon Award for meritorous service to the natural gasoline industry.

D. E. Buchanan, who in later years joined with Hanlon to form Hanlon-Buchanan, Inc., was vice president of Chestnut & Smith when Oberfell joined that organization. "Buck" can tell many a story of the experiences he and George had driving an old Dodge or an old Hupmobile to plants at Keifer or Drumright—trips that back in those days took all day and at least three flats.

Oberfell used the company's Keifer plant for his experimental laboratory in working out the basic principles that were needed to make the low pressure oil absorption process an economic success.

There were many men in the audience when Oberfell received the award who can remember when oil absorption worked excellently on high pressure lean gas but was virtually useless on low pressure rich gas. They can remember, too, that it took considerable courage to build an oil absorption type plant to process the rich Glenpool gas based on the premise that lean oil circulation should be proportional to the volume of gas rather than to the amount of gasoline.

But it worked, and its success was responsible in large measure for the rapid extension of the oil absorption process in the natural gasoline industry.

Along in 1923 George Oberfell decided to leave Chestnut & Smith, and to engage in consulting work.

THEN he and R. C. Alden, who was Oberfell's right hand man at a large gasoline plant Oberfell had designed and constructed for a client, wrote a book.

That book, titled simply "Natural Gasoline," published in 1924, was the most complete treatise that had ever been done on natural gasoline. Even today, after 15 years, that book is still the "bible" for many a natural gasoline plant man.

An insight into the character of George Oberfell and "Dick" Alden can be gleaned from a part of the preface to that book. "Finally," the preface reads, "we wish to express our appreciation of the assistance and inspiration of T. K. Smith, president of Chestnut & Smith Corporation, the pioneer of the natural gasoline industry in the Mid-Continent field. Without his unfaltering faith and encouragement a considerable portion of the material for this book would never have been obtained.

"The writers will be gratefully indebted to the reader for calling their attention to any errors that he may find in this edition."

That book set George and Dick on the highway of their careers that have been so closely interwoven for the past 15 years.

At that time the Phillips Petroleum Co. was engaged exclusively in the production of crude oil and the manufacture of natural gasoline. President Frank Phillips kept thinking more uses for natural gasoline could be developed.

F. E. Rice, now a vice president of the Phillips company, recognized the Oberfell and Alden book for what it was, and told President Phillips that George Oberfell would be a good man for the job that was waiting to be done. Oberfell was employed to establish a research department.

That was in 1925, and shortly thereafter Phillips became involved in a patent suit with the Carbide & Chemicals Corp. and it was Oberfell and his staff that worked up the data that permitted Phillips' attorneys to defend this suit successfully.

Under Oberfell's direction, and that of "Dick" Alden whom Oberfell had employed, the research department worked up the data on the now famous "66" motor fuel which resulted in the Phillips company entering the refining and marketing branches of the oil industry.

Then came the task of finding uses and establishing markets for the by-products of natural gasoline. George Oberfell and his department went to work on the "bottled gas" problem, on the theory that butane and propane could be adapted to that business.

When the Philgas division was established Oberfell was placed in direct charge. He moved to Detroit and lived there for several years, dividing his time between that city and Bartlesville. George says little about the struggle he had getting recognition for liquefied petroleum gas. But those who know of that period say he worked night and day with the same determination that he exhibited many years back when he was going after that college education.

Other important activities that have come under Oberfell's supervision are the development of the method of fractional analysis, studies that helped materially in the adoption of the Reid vapor pressure method, and recently the important polymerization of gases project.

Despite his heavy duties George has taken an active part in the technical activities of all trade associations connected with the petroleum industry.

He was one of the men "in" at the organization of the Natural Gasoline Assn. For several years he was chairman of the technical committee. It was during that period that technical activities were initiated which have earned the association its high reputation.

THE association's outstanding research program at the University of Michigan was launched while Oberfell was technical committee chairman. There also was the development of the Reid vapor pressure and the establishment of a grading system for natural gasoline, and the working out of specifications that are still in universal use.

Oberfell is a member also of the American Chemical Society, the American Gas Assn., the American Petroleum Institute, the Society of Automotive Engineers, the American Society for Testing Materials, and of the Co-operative Fuel Research Committee.

It was A. S. T. M. that gave George his current hobby.

About three years ago he was honor guest at the annual meeting of that famous organization. Its members gave him a high-powered rifle.

Now he has seven guns.

At every opportunity he makes a Sunday trip to a farm the family has in Kansas where the jackrabbits and the crows provide the targets. Once a year, at least, he goes after big game, preferably antelope in New Mexico. He's a good enough shot that he once got his antelope with a bullet in the eye.

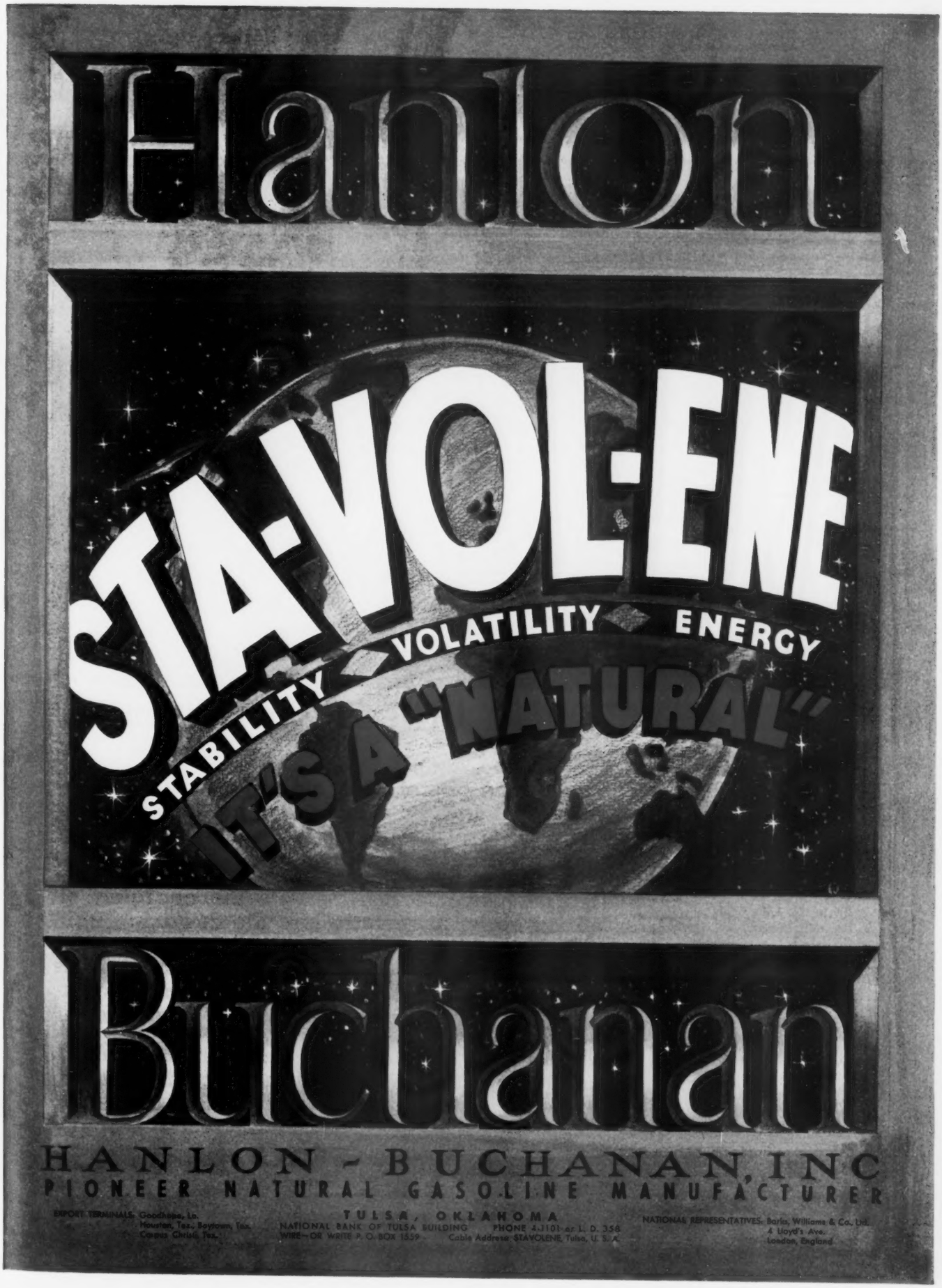
George's friends say that, riding along in an automobile or train, he will spot a rabbit, crow, hawk or even a cow and, shutting one eye as if aiming, remark half-aloud, "That's just about the right distance for a good shot."

The writer had lunch with George Oberfell, right after he had been given the Hanlon Award, in the hope that he could learn more about the man.

"What," says George to the writer by way of opening the conversation, "do you think of that new 'verminter' rifle with its 250-3000 Savage case, I believe it is, necked down to .22 size with a sharp shoulder and a velocity of around 4400 feet?"

"I haven't seen one," the writer replied, "but I've read about it and it sounds like a flat-shooting combination. But the .257 Roberts—now that is a neat all-around gun. . . ."

By the time the category of guns and cartridges and cartridge re-loading had been discussed, it was time to return to the sessions of the association.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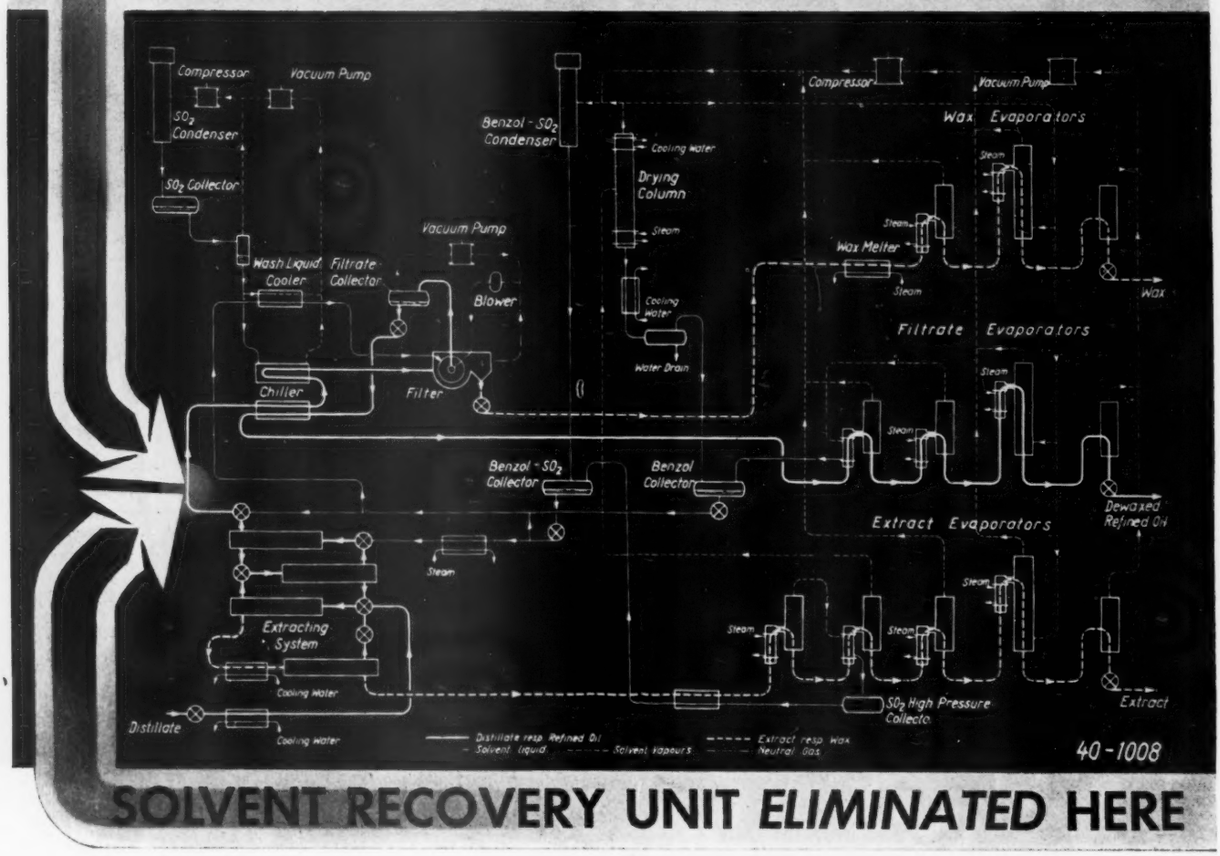

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Get Motor Fuel Performance Data from Inertia-Loaded Engines

By Herschel G. Smith*

This is a condensation of a paper entitled "Laboratory Method for Indicating Road Performance of Motor Fuels" and presented at the Ninth Mid-Year Meeting of the American Petroleum Institute in New Orleans, May 18, 1939.

A LABORATORY method for indicating road performance of motor fuels has been developed employing inertia loading as afforded by a flywheel. The flywheel provides a time interval of about 90 seconds in loading within the range of speeds of interest during which observations can be made of the knocking characteristics of a fuel.

After having studied the problem of automotive engine performance coupled with motor fuel properties, it was concluded that the main difficulty with previously proposed laboratory methods lies in the time element for loading the engine and picking up speed. It was also concluded that it would not be practicable to develop any test procedure that will meet all conditions, and that it would be best to attempt to eliminate as many of the mechanical variables as possible, particularly those that are not tied up directly with the properties of the motor fuels. An attempt was made to apply a performance test that, for a controlled array of operating conditions, might be as much a test of fuels and as little a test on engines as possible. About as much success should be expected from attempts to standardize the performance of all engines in the world as from efforts to standardize the thoughts and performance of all individuals, it was concluded. The rather consistent results from nearly two years of operation have led us to place some reliance on the ratings by this method, as an indication of expected average road performance. Reproducibility of results under specified conditions of test appear to be within a limit of error of ± 1 octane number. In no case have we ever encountered such wide swings in values as have been reported on some road tests.

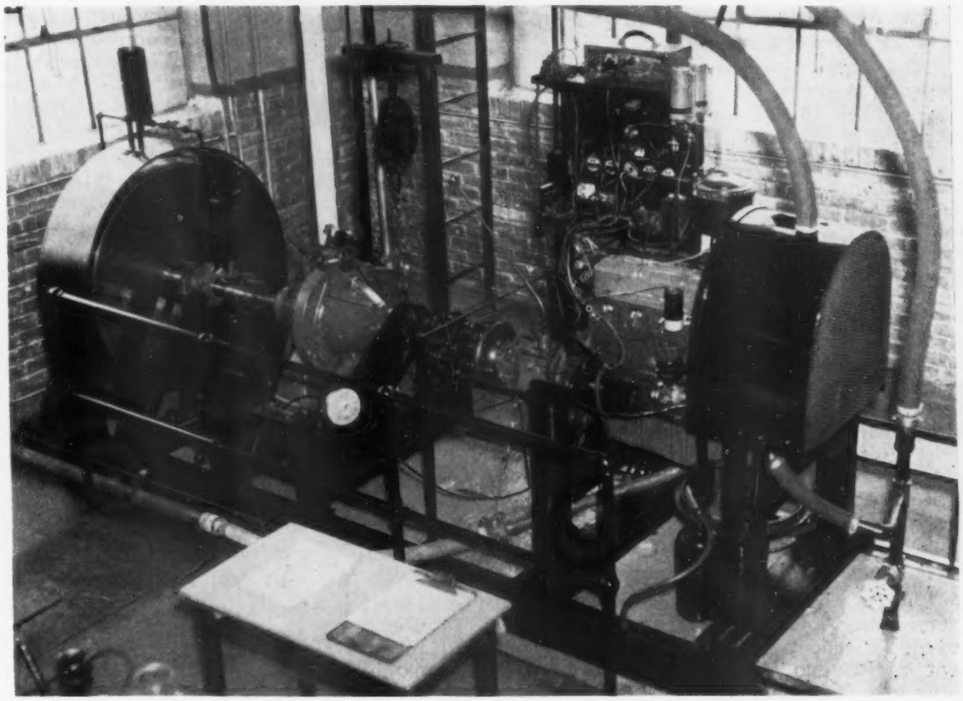
Accurate road tests are tedious and a number are needed to afford reliable average values for a given motor fuel. Such tests are too expensive to serve for routine control purposes in the manufacture of motor fuel and the results generally are employed today as a guide in fixing the equivalent limits or values for the operation of less expensive standardized laboratory tests with regular singular-cylinder engines.

The entire cost of laboratory apparatus, including three low-priced test engines, with instrumentation was approximately $3100. This is roughly one and one-third times the installed cost of one standard CFR unit. The test engines included one standard Ford V-8, 85-hp. unit, one standard Chevrolet unit, and one standard Plymouth unit.

Simulates Traffic Light Starts

If one arranges an outfit with the usual power absorber in the way of an electric or water dynamometer, or friction brake, and attempts to test a fuel for knocking by operation of a regular multi-cylinder engine at normal load, with

*Gulf Oil Corp., Philadelphia.



The AIL test apparatus includes a standard Ford, Chevrolet, or Plymouth engine (right), a 240-pound hydraulic dynamometer, a clutch and standard passenger-car transmission, and a 2550-pound flywheel (left) which enables duplication of inertia effects in starting a car from standstill

throttle open at probable maximum knock, the engine merely will accelerate in a very short time to high speed under load. The operator then has insufficient time to observe performance at the desired range of speeds. The absorption of power by the inertia-load system, using a flywheel of appropriate weight, with shaft on roller bearings, affords us a time interval of about 90 seconds, for observations. This is somewhat of an amplification of the conditions encountered by a car operator in casually throwing the throttle wide open after starting from a traffic light.

We have named our test the AIL test (acceleration-inertia-load) although this designation could be considered as referring to what "ails" the fuel. We have in this outfit a 2550-pound alloy-steel flywheel having inertia of the order of that of an automobile of average weight upon acceleration, in combination with a brake for deceleration in preparation for a succeeding test and necessary operating instruments and auxiliaries. The set-up is arranged so that one make of engine can be replaced by another with minimum effort.

The assembly with one of the three engines regularly employed is illustrated herewith. An overhead thermostatically-controlled water-cooling system is not shown.

The engine is shown at the right with two-inch rubber hose leading up to a truck radiator immersed in a metal drum through which cooling water is circulated. A 240-hp. hydraulic dynamometer is shown to the left of flexible shaft couplings. A special fly-wheel capable of being run at 3000 r.p.m. is at the far end of the shaft. It has a moment of inertia such that a torque of approximately 135 foot-pounds is required to give it an acceleration of 0.23 revolution per second. It is a wheel in the form of a solid, right cylinder approximately 38 inches in diameter, 8 inches thick, and weighing approximately 2550 pounds.

In making the tests the engine must have been run the equivalent of at least 2000 miles at 45 m.p.h. with a 25-hp. load since the last carbon removal or if new. These conditions are considered equivalent in effect to 3000 miles of average use in a passenger car. Coolant temperature is maintained close to 180° F.

In preparation to take knock intensity readings the flywheel and engine are slowed down to the equivalent of 8 m.p.h., with the transmission in high gear. The throttle is then opened to a point yielding maximum knock intensity over the major portion of the speed range employed. In most cases wide-open throttle will give the best results but the exact point must be determined experimentally. In case the knock intensity of the fuel being tested is too low to give reliable readings, the ignition timing may be set ahead to increase detonation.

Knock intensity observations are taken as the speed increases, beginning at 10 m.p.h. and continuing at intervals of either 2.5 or 5 m.p.h. until maximum speed (usually 35 m.p.h.) is reached.

It is realized that no particularly new principle is involved for this method and that there is much to be studied and developed on the problem. This paper is offered for what it may suggest and to disclose efforts to fill a need of the industry for some method that will tend toward closer general agreement in motor-performance values.

H. C. Mougey, assistant technical director and chief chemist, General Motors Research Laboratories, gave an interesting report on the progress made in correlating laboratory tests for oxidation tendencies of oils with service results, before the Detroit local meeting of the American Society for Testing Materials, April 19. Interest in this field has increased remarkably the last few years, and great strides have been made both in testing methods and correlation, and in the manufacture of better lubricating oils.

Charles S. Howe, ex-president of Case School of Applied Science, died April 18 in Amherst, Mass., at 80. Dr. Howe served the school for 27 years as president until retirement in 1929 and 13 years before as professor of mathematics and astronomy.

Condenser Tube Alloys Improved with Antimony

An alloy that "bids fair to supplant both red brass and plain Admiralty for condenser tube service" consists of Admiralty metal to which is added less than one part in a thousand of antimony. N. W. Mitchell, research metallurgist, Chase Brass & Copper Co., described development and service tests of the new alloy at the recent Oil World Exposition in Houston.

Recent research in corrosion resisting copper alloys for this service with arsenic and antimony has shown the superiority of the latter. Arsenic's effect has been known for a longer time and has been tried out in brass condenser tubes because of its ability to prevent dezincification. It was found unsatisfactory for this application when it appeared that the presence of arsenic may induce intercrystalline corrosion. This results in premature failure along the crystal boundaries.

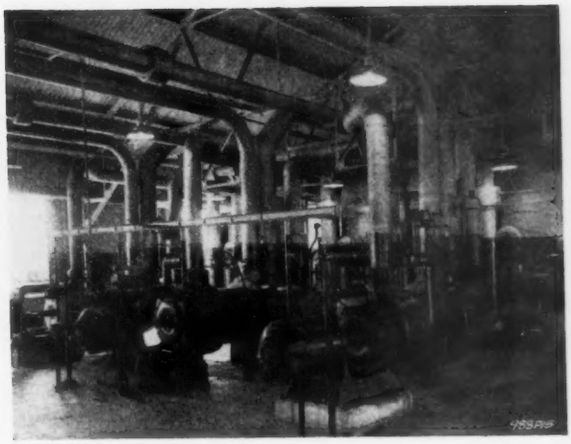
Early opinions were that antimony would not prevent dezincification because it, unlike arsenic, does not lower the overpotential of brass to hydrogen evolution. It was found, however, that the addition of antimony in small quantities to brasses, including aluminum brasses and Admiralty, is definitely beneficial to their corrosion resistance to water. As small an amount as .02% prevents dezincification of 65% alpha brass. Even as small an addition as .007% antimony greatly increases the corrosion resistance of the brass to water, although superficial dezincification still occurs. The effect of antimony on the dezincification of brasses is greater than that of arsenic, and what is of even more importance, intercrystalline corrosion does not occur.

Admiralty metal was preferred for the antimony addition rather than lower copper content brass. It has a long record in all fields of condenser tubing and its tin content is beneficial to general corrosion resistance and to physical properties, Mitchell said: The advantage of Antimonial Admiralty for oil refinery heat exchangers and condensers and for gasoline plant units is readily apparent when it is known that more than 50% of refiners' Admiralty condenser tubes fail by dezincification.

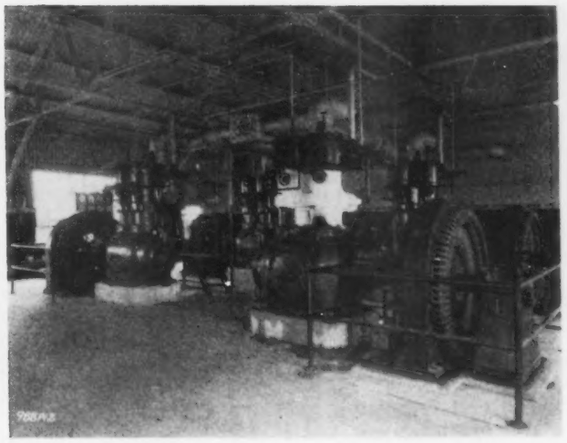
The use of Red Brass in the past few years has done a great deal to improve condenser tube life, he brought out. There is no question of its superiority over Admiralty in resistance to water. Unfortunately, however, Red Brass is less resistant than Admiralty to corrosion by sulfur and those sulfur compounds capable of forming copper sulfide. Although the lesser resistance of Red Brass to sulfur does not always result in shorter net life compared to Admiralty, the heavier sulfide corrosion product sometimes diminishes the thermal conductivity through the tubes.

Stocking of both types of tubes has helped to solve the problem but duplication is, of course, expensive. According to all indications, Antimonial Admiralty is superior to plain Admiralty in its resistance to water and equal in resistance to sulfur, Mitchell said. As compared with Red Brass it is superior in resistance to sulfur and equal in resistance to water. "Antimonial Admiralty condenser tubes have had three years of service in oil refineries with no trouble of any sort reported as yet. It is firmly felt that the development of Antimonial Admiralty is the most important one since the introduction of Red Brass to the industry a few years ago," he concluded.

Earl Cooper, in former years an American Automobile Association headliner, recently won the Old Timers' Race at Pasadena, driving a 1904 single-cylinder Brush car which had been tuned up by Union Oil Co.'s Motor Measure Unit No. 1, and "souped up" with Ethyl gasoline. He beat out **Barney Oldfield,** famous track burner of a generation ago, who drove a 1906 Cadillac single-cylinder, and Pasadena's Fire Chief driving a 1904 Oldsmobile, also a "one-lunger."



Treating room—Refrigerating contactors and chillers



Refrigerating room—Ammonia compressors

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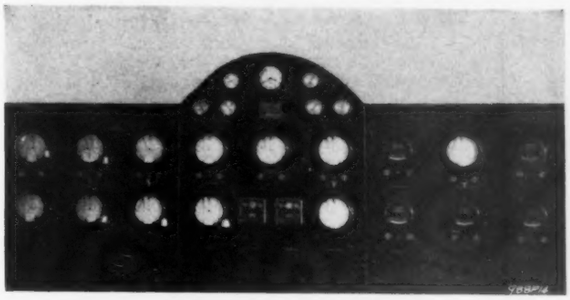

Central control board for flexible and automatic operation.

Below: Blow cases, clarifier, heat exchangers and neutralizing soda settler.

The four views on this page are of a 12,000 barrel per day Stratcold plant.

Reduce sulfur, remove gums, assure color stability, conserve octane, give highest gasoline yields; require least acid with lowest overall treating cost. More than 90,000 barrels per day of cracked naphtha now are being treated by the Stratcold process.

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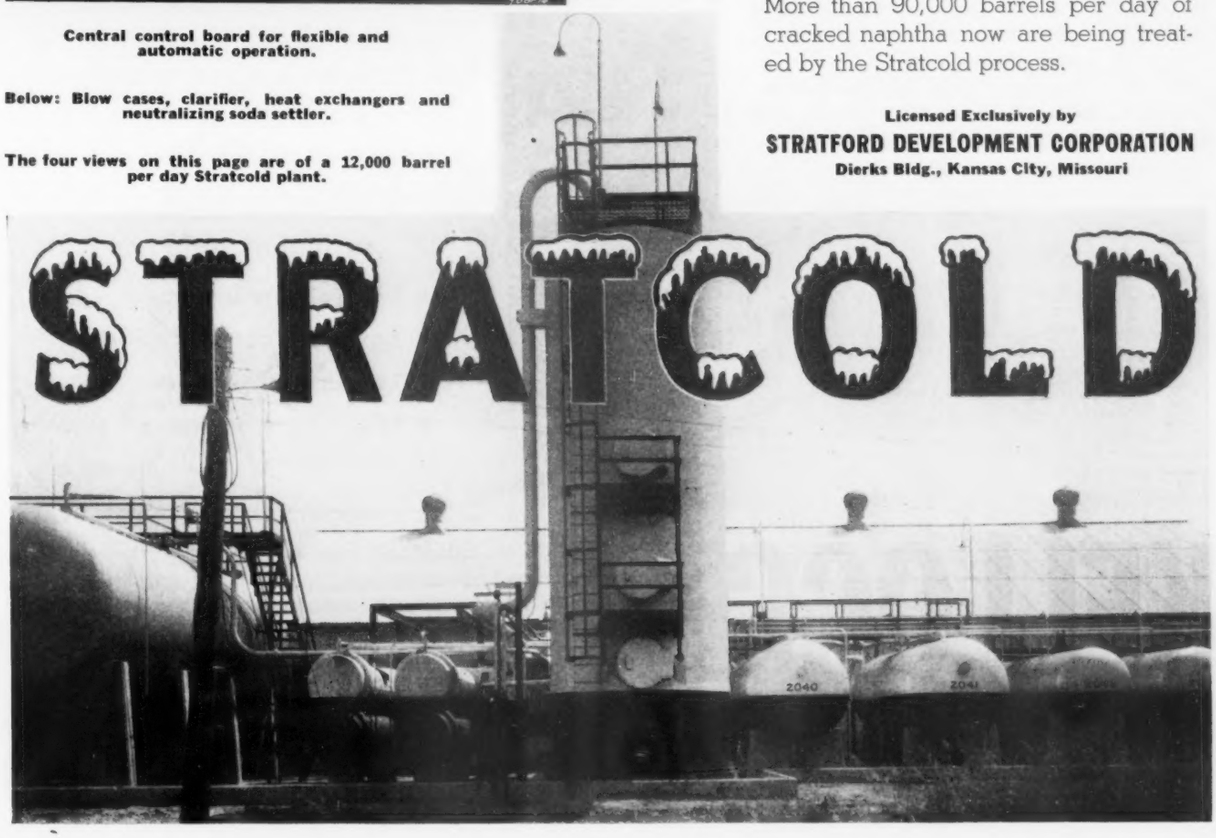
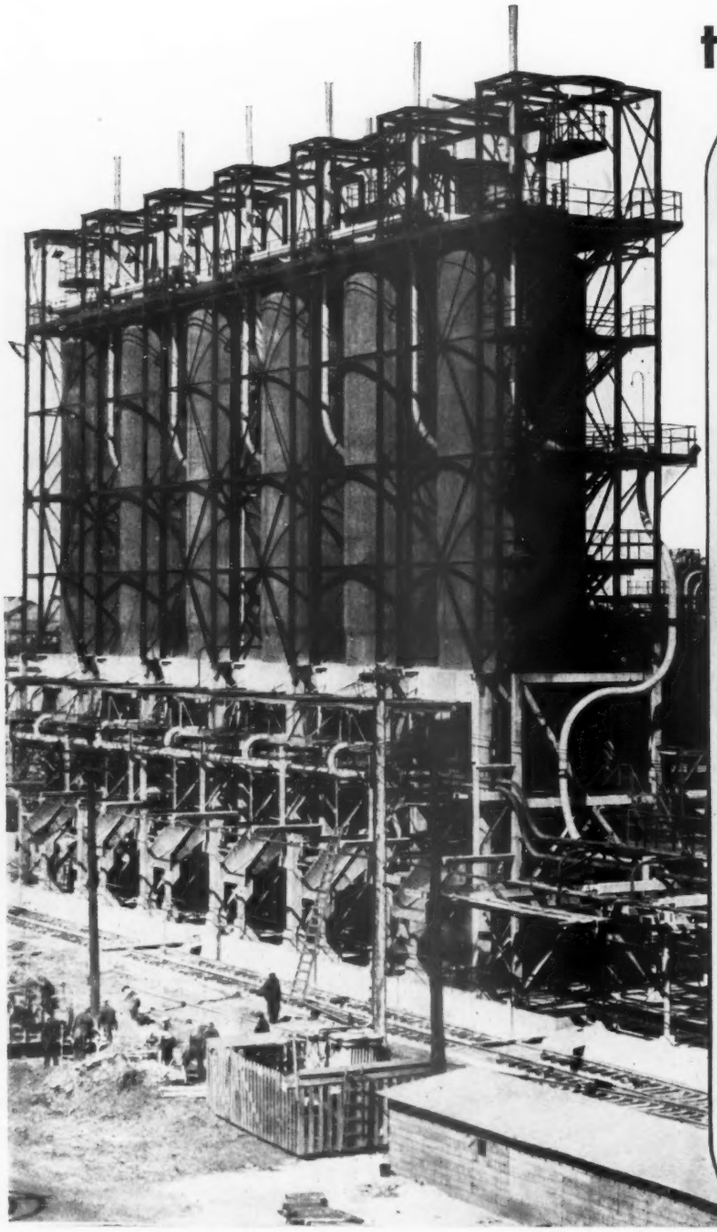


KELLOGG-built delayed coking units enable refiners to secure . . .



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This increase in gasoline is accompanied by a reduction in fuel oil, making a better balance in profitable products produced.

Operating records of such units show:

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Corrosion Resisting Linings

Reduce Shut-Down Time

THE insulating effect of some corrosion resisting chromium sheet linings for refinery pressure vessels and the resulting reduction of shut-down time for periodic clean-outs is a feature of these linings stressed by J. T. Shaler in a paper presented here at the Ninth Mid-Year meeting of the American Petroleum Institute. Mr. Shaler had for his subject the development of "Field Installation of Chromium Sheet Linings in Pressure Vessels" covering the experience of Standard Oil Co. of Calif. over a number of years.

Other papers included in the corrosion prevention symposium included "Metal Spray Protection of Refinery Equipment" by D. R. Johnson and E. J. Dewey, Jr., of Continental Oil Co., and "Pressure Vessel Linings of 11-13 Per Cent Chromium Steel" by R. K. Hopkins of M. W. Kellogg Co.

Efforts of metallurgists to find better corrosion resisting methods, in particular, chromium sheet linings, finally culminated in the present practice of using special low-carbon grades of sheet, usually 15-gage, and plug-welding through 9/16-inch diameter holes on 4-inch centers, Mr. Shaler said in discussing field application of linings.

The economic loss due to shut-downs can be reduced by the introduction of water to cool the vessels and their contents to a safe temperature for opening. The consequences of rapidly cooling refinery vessels, especially heavy-walled vessels, are sometimes serious when bad distortion occurs or a vessel is cracked by too rapid cooling.

The effect of plug-welded chromium sheet lining on heat transfer has been demonstrated by tests in which both lined and unlined plates were heated to the desired temperature and water flowed over the uninsulated side, thermocouples recording the temperatures throughout the thickness of the plate.

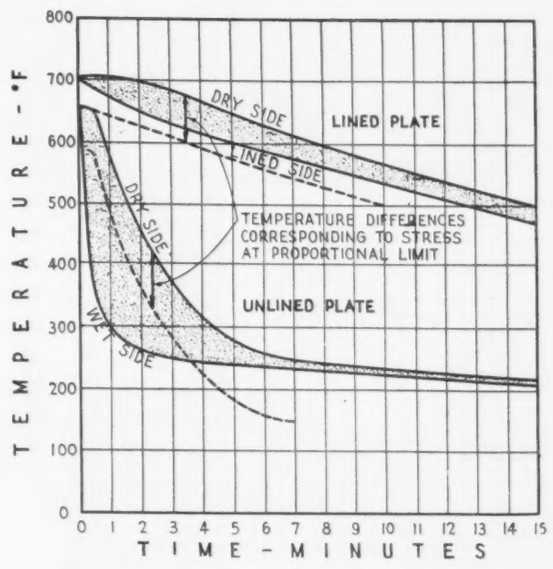
Upon application of water to the unlined plate, the wet-side metal temperature dropped rapidly, as shown in the accompanying graph until a differential of 300° F. existed one-half minute after application of the water. This introduces high tensile stresses in the wetted side of the plate. The temperature of the lining on the lined plate dropped immediately to 212° F. but this did not affect greatly the steel plate itself and the temperature of both surfaces fell off slowly. The maximum temperature differential amounted to only 43° F. and occurred about two minutes after application of water. On subsequent runs the maximum differential was progressively smaller due to increasing warpage of the lining. Thus this type of lining protects the vessel against large temperature differentials and insures safe cooling rates, Mr. Shaler brought out.

Sheet Lining Expensive

Mr. Shaler gave a great deal of valuable detail covering the methods of lining installation. He pointed out the importance of high quality materials and workmanship and stated that, as might be expected, field installation of chromium sheet lining is an expensive job. Lining costs will run between $5 and $10 per square foot, depending upon the number of nozzles and openings, and upon the complexity of internal members which must be protected, he said. The economy of lining as compared with replacement involves not only cost of lining, but consideration of numerous factors such as freight, erection cost, and time to deliver replacements. Each case must be studied carefully, he said.

A number of compositions are employed to resist corrosion but the most important was said to be 11-13% chromium. For linings in cracking service a special low-carbon grade is employed, the lowest obtainable commercially. Although .08% carbon has been used, .06% is becoming available, and should be specified. The low carbon content, more than any other single item, is believed to be the key to successful installation. The lower the carbon the less the tendency to form chromium carbides during welding which air harden to brittle zones next to welds.

The company purchasing specification calls for 11-13 chromium, and a maximum of .08 carbon, 0.5 nickel, 0.3 manganese, 1.00 silicon, .035 phosphorus, and .035 sulfur. It requires the sheets to be hot-rolled and annealed, that they be white-pickled after annealing, and that the hardness shall not exceed Brinell 174. The sheets must be free



Cooling rates of chromium sheet lined and unlined 2½-inch insulated steel plates cooled by application of water. The maximum temperature differential on the lined plate was only 43° F. compared with 300° F. on the unlined plant

from inclusions, hard spots, seams, laminations or other flaws. The metal must be capable of being flat on itself without cracking on the outside of the bend.

Several brands of low-carbon 18-8 chromium-nickel electrodes with carbon-free coatings have been found suitable. The preferred size is ⅛ to 5/32 inch rods.

Qualifications for welders are high. Not only the welder's ability to make a good test weld should be considered, but also his attitude towards doing continuous, tedious work under uncomfortable conditions. In a typical fractionating-column lining job there may be as many as 15,000 plug-welds and as much as 1500 feet of seal welding, mostly in the side-hand and some in the overhead position.

Dimensions of the individual sheets are chosen arbitrarily, of course, but for economy they should be as large as can be passed through the manway and handled readily. For example, if the vessel to be lined has 24-inch manways, sheets 23 by 120 inches will be found most suitable. In the usual case of a vessel standing vertically, it is preferable to start at the top of the shell and, after having completed one ring of lining, to work down. After tack welding a sheet, the entire area is gone over with a light pneumatic hammer to insure a tight fit to the shell. When the welding has been completed the sheet is forced against the shell with a pneumatic hammer to eliminate drawing and distortion due to welding.

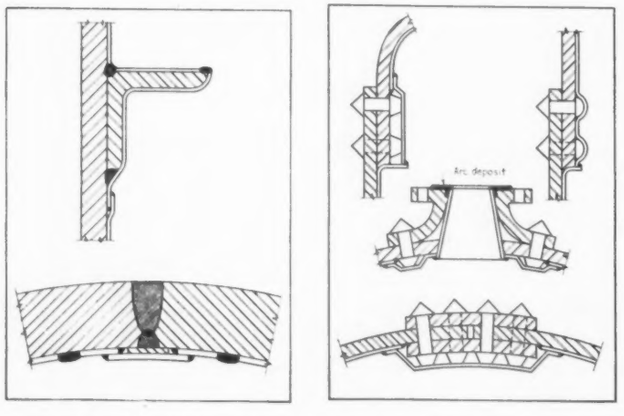
Fill Voids with Tar

The complexities of fitting the lining around some internal obstructions may require leaving small void spaces behind the lining. In all cases these should be filled with a mixture of heavy tar and coke, mixed to a heavy jelly-like plasticity. Riveted vessels are protected by bringing the shell lining up to each side of the joint just short of the rivets. The edge of the lining next to the caulked edge is flanged over a distance somewhat more than the thickness of the shell plate. An offset strip is made to cover the rivets. This landed on the flanged edge of the lower sheet, to which it is fillet-welded, and it is welded then to the upper sheet of lining. The space behind it should be filled also with the tar-coke mixture. The accompanying sketches show typical methods of handling lining around various internal members such as braces, tray supports, beams, internal piping, etc.

Serviceability of linings is about as variable as their costs, due largely to the inability to say just when a lining has failed. After relatively few runs, chromium sheet lining becomes buckled between plug welds, and looks somewhat like a quilt. However, this does not affect the serviceability of the lining. After the first buckling between plug welds, little additional change may take place for several years. An over-all figure on maintenance of linings is hard to determine, but a fair estimate, based on observing about 50,000 square feet of lining over a period of six to eight years, would be the replacement of one to two per cent per year.

Numerous improvements in materials, design, and technique of installation have been made since linings on which the above estimate is based and newer linings can be expected to give somewhat better service and endure more drastic cooling conditions than the early linings. Some of the largest fabricators in the country have developed their own linings to a high state of perfection. Not faced with the need for installing the lining in the completed vessel between operating runs, having access to various types of automatic welding processes, and being able to line flat plates prior to rolling, these fabricators no doubt have reduced costs below those possible in field installation.

Some commercially-applied linings consist of a sheet resistance-spot-welded on close centers, leaving a small unwelded area between spots. Others consist of a sheet resistance-spot-welded in a manner that the adjacent spots overlap, giving the effect of a continuously-welded or integrally-bonded lining. Others consist of an alloy deposit fused to the steel, the composite material then being rolled to final plate thickness, giving a continuous integrally-bonded alloy facing. Still others have installed plug-welded linings essentially the same as those described. Some of these will not have the advantage of insulating effect found in the plug-welded linings, however.



Typical details of chromium sheet lining. Space around rivet heads is filled with a viscous tar and coke mixture

* * *

Metal Spray Successful

Continental Oil Co. has had good success using the metal-spray process for the protection of refinery vessels against corrosion, according to data presented in a paper by D. R. Johnson and Earl K. Dewey, Jr. In several respects the company's experience has paralleled that of many companies which have seen fit to abandon metallizing as a result of many failures. "Profiting by careful examination of these failures, we now can consider metallizing for any particular application, and predict the result with reasonable certainty," it was indicated.

Meticulous attention to every detail is the only guaranty of complete success, the warning was given. Knowledge of the important essentials may be obtained from published recommendations. Reaction chambers metallized with aluminum have suffered no measurable loss from corrosion in 4½ years, compared with a previous average annual loss of .036 inch.

Semi-annual inspection records on 12 Dubbs reaction chambers show an average annual metallizing replacement of 4 to 5% of the total area originally coated. This replacement varies from as little as 1% to as much as 10% for individual chambers. A similar experience with six dephlegmator towers was reported.

After being convinced that aluminum could be applied successfully, other metals were tried when it was obvious that aluminum was unsuitable. In a refinery where a bubble tower of a cracking unit processing high-sulfur topped crude had lost metal at 0.129 inch per year by localized corrosion and erosion 12 coats of 18-8 stainless steel were applied to a thickness of .02 inch. Two inspections following the installation indicated that successful protection was being secured.

Lubricating-oil clay contact kettles metallized with red brass were not wholly successful although part of the failure could be attributed to application under unfavorable atmospheric conditions, a violation of one of the fundamental rules. Among miscellaneous applications have been storage tank surfaces; drums; ends of pipe-still tubes; exchanger-tube sheets, heads, and shells; and bull wheels on Duncan acid-sludge burners. For these purposes aluminum, red brass, 18-8 stainless steel, and lead have been used.

Important Essentials

Preparing Surface:

1. Sand-blast to pure base metal.
2. Direct blast against metal at an angle of approximately 60° F. to the surface.
3. Use first-quality blasting sand. We suggest No. 4 flint sand (dry-sacked). *Do not use ordinary river sand.*
4. Use dry air when sand-blasting.
5. Do not sand-blast large areas ahead of the metallizing operation. Even under the best of weather conditions, the area sand-blasted must not exceed that which can be

FLANGED *and* DISHED HEADS *for Pressure Vessels*

. . *by* Wyatt's

Wyatt flanged and dished heads, for pressure vessels, are made of A.S.T.M. A-70 flange quality material, and are dished to the correct spherical and knuckle radius to conform to A.S.M.E. and A.P.I.-A.S.M.E. code requirements. They are fabricated in all required thicknesses, and in sizes from that illustrated to special 48' diameter pressure spheres.

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Plants: **HOUSTON and DALLAS, TEXAS**

"Dependable Fabricators and Erectors For 25 Years"

D. R. Johnson, left, assistant manager of manufacturing, Continental Oil Co., and Earl K. Dewey, Jr., metallurgist, both associated with the company's chemical laboratories at Ponca City, Okla., who presented a paper on the use of spray metal coatings for corrosion protection at the mid-year meeting of the American Petroleum Institute in New Orleans, May 15 to 18. Johnson, a native of Wisconsin, was graduated in engineering at Colorado University in 1923 and joined Continental the following year. Dewey became associated with the company immediately after he was awarded his B. S. degree in chemical engineering at Union College, Schenectady, N. Y., in 1937

sprayed during the same 8-hour shift in which blasting is done. In moderately humid weather it is necessary to metallize within four hours of sand-blasting.

6. When preparing surfaces which have been in previous service and on which coke or oil may be trapped in seams or under rivet heads, special care must be taken to remove such oil or coke. Heating with a torch is often necessary prior to sand-blasting.

7. Use dependable sand-blasting equipment. We have had good success with the Ruemelin sand-blast generator. There are several other equally satisfactory machines on the market.

Applying Metal Spray

1. Use dependable equipment. We use a standard metallizing gun which has been equipped with a modified atomizing tip of our design and manufacture.

2. The operator must be fully qualified both as to skill and personal reliability.

3. The metallizing gun must be supplied with absolutely dry air. It is sometimes necessary chemically to dry the air. A charcoal filter has proved satisfactory.

4. The metal must be sprayed on uniformly. Wide variations in thickness of coating are conducive to failure. Best results have been secured when applying individual coats having thicknesses ranging between 0.0015 in. and 0.0020 in. For example, when applying aluminum to a total thickness of 0.020 in., 12 coats are sprayed.

5. Use only highest-grade wire, paying particular attention to quality and diameter tolerances. It is economical to insist on wire sized to close tolerances, even though such wire may be priced at a premium. We have found, when using our modified gun, that 12-gage wire gives the best results—although we are now experimenting with 11-gage wire.

6. The rate of applying coatings can be varied within reasonable limits, but we have found the following to be optimum:

	(Pounds Per Hour)
Aluminum	1.2 to 1.8
High-carbon steel	3 to 4
Low-carbon steel	3 to 4
Lead	15 to 20
Monel metal	2 to 2.5
Red brass	3 to 4
Stainless steel (18-8)	3 to 4

7. Gas-pressure settings are important, and must be varied as a function of the melting points of metals sprayed, as follows:

	Approximate Melting Point (Deg. F.)	Acetylene Pressure (Pounds)	Oxygen Pressure (Pounds)	Air Pressure (Pounds)
Aluminum	1,217	15	16	75
High-carbon steel	2,560	19	20	80
Low-carbon steel	2,680	19	20	80
Lead	620	13	14	75
Monel metal	2,460	24	25	80
Red brass	1,870	18	19	80
Stainless steel (18-8)	2,550	18	19	80

8. All other mechanical work to be done in the zone to be metallized should be completed before metal is sprayed.

9. Do not attempt to metallize when the relative humidity exceeds 60 per cent.

10. Be sure that the freshly sand-blasted surface does not come in contact with anything moist or oily. There is a natural tendency to think that sand-blasting is merely to roughen the surface, and that the heat of the metallizing spray will remove the impurities. This is not the case; inasmuch as the temperature of the sprayed metal, when it strikes the surface, is estimated to be less than 200 deg. F. When in doubt as to the cleanliness of surface, take no chances; sand-blast again.

Current aluminum applications are being made at a unit cost of 70 to 75 cents per square foot. Repair work on small areas has cost $1.10 to $1.15 per square foot. The cost for spraying the other metals will vary, depending upon the thickness of coating, cost of sprayed metal, and extent of surface covered. Lead coatings have been applied for as low as 70 cents per square foot while 18-8 stainless-steel metallizing has been as high as $2.25 per square foot.

A typical break-up of charges on a 400-square-foot project is as follows:

Labor	$130
Aluminum	43
Sand	43
Welding supplies	65
Handling charges	2
Transportation	10
Overhead	32
Total	$322

Metallizing of pump rods and plungers has furnished some of the best examples of savings by use of the metal-spray process. One refinery had been using 14% chromium stainless steel plungers in a hot-oil pump. The rods were 60 inches long with an outside diameter of 5 inches and cost $300 new. These rods are being made now of low-carbon steel tubing metallized with high carbon steel. The total cost is approximately $90. In another refinery badly scored plungers were rebuilt at $53.50 each as compared with $126 cost when new.

Additive for "Dustproofing" Oils

The effectiveness of coal "dustproofing" oils is improved by the addition of 0.5 per cent rubber or a commercial substance of molecular weight 50,000 to 100,000 (understood to be an iso-butylene polymer), it is shown in the annual report of the British Fuel Research Station. The function of these additives is to close the entrances to pores, prevent the penetration of the dustproofing fluid into the coal, and reduce the quantity of oil necessary, particularly for the more difficult types of coal.

Little evidence is found to support claims in American journals that oil treatment of coal has other advantages such as improved combustion properties, improved weathering of graded sizes, and reduced loss of caking properties during storage.

New Paraffin-Base Oil in Arkansas

Oil from the discovery well in the Atlanta District, Columbia Co., Ark., has been pronounced paraffin in type from an analysis by the U. S. Bureau of Mines. The oils from similar horizons in nearby Magnolia, Schuler and Village fields are designated as intermediate type crudes.

5 out of 9

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Of the world's Furfural extraction capacity – nine plants, with a total charging capacity of 25,110 barrels per day – five plants, with a total charging capacity of 13,050 barrels per day were designed and built by Lummus. Delivery on these five plants averaged 6½ months, and every unit operated more than thirty days on initial run.

WORLD CAPACITY – FURFURAL PROCESS

Company and Location		Charging (Bbls./Day) Capacity
Gulf Oil Corporation, Port Arthur, Texas	*	5,000
Indian Refining Company, Lawrenceville, Illinois		1,500
The Texas Company, Port Arthur, Texas		6,000
Shell Refineries, Ltd., England		1,650
Elwerath, Germany	*	1,700
Photogen Rafinerie de Petrol, Roumania	*	100
The Magnolia Petroleum Co., Beaumont, Texas	*	3,000
Trinidad Leaseholds, Pointe-a-Pierre, Tr.		2,910
Shell Oil Company, Martinez, California	*	3,250
		25,110

Low in first cost, Lummus Furfural plants yield high returns. They can be designed to handle all types of stocks, from the very paraffinic, through mixed base crude, to extremely naphthenic crudes. Write for complete data.

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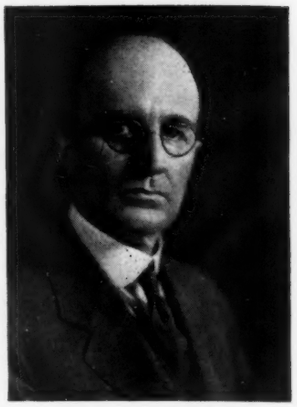
LUMMUS

PETROLEUM REFINING PLANTS

Multi-Layer Wall Construction For Pressure Vessels

By T. McLean Jasper*

This is a condensation of a paper presented at the ninth mid-year meeting of the American Petroleum Institute in New Orleans, May 17, 1939.



T. McLean Jasper is technical consultant to the sales department of A. O. Smith Corp., Milwaukee. He joined the company in 1926 leaving the faculty of the University of Illinois where he was research associate professor of engineering materials. While at Illinois he acted as engineer for the National Research Council on its investigation into metal fatigue

MULTI-LAYER construction of thick-wall pressure vessels, a development which has grown out of the failure of small thick-wall high-pressure vessels in severe high-pressure and high-temperature service, is expected to become available in the field of large pressure vessels, in which size and weight are vitally essential to economic production. The largest vessel so far constructed weighs 110,000 pounds.

Multi-layer vessels have been in successful service since 1931. The API-ASME code recognizes this construction and provides for its use in services where thick-wall pressure vessels are necessary. These vessels are in service now for hydrogenation at high temperatures, gas separation, high pressure chemical processes, high-pressure hydraulic-press cylinders, high-pressure gas storage, and high-pressure air-liquid accumulators. This type of construction is not likely to replace the present large single-piece pressure vessels for ordinary refinery cracking units, because of its general cost, however.

The multi-layer vessel is constructed of several layers of de-scaled steel, each progressively wrapped and tightened around the cylinder by mechanical means and then welded together at the edges. Fig. 1 shows two vessel sections in the course of construction. The thickness of each outside layer is generally less than ¼-inch whereas the inside layer is leakproof. Each subsequent layer is perforated with small holes for venting.

*A. O. Smith Corp., Milwaukee, Wis.

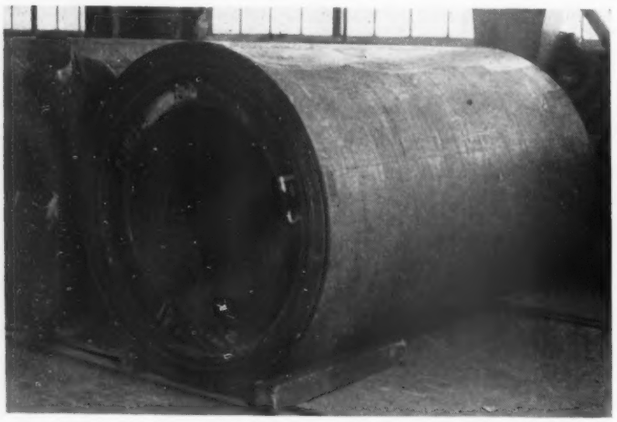


Fig. 1. Section of a multi-layer vessel after 26 layers have been wrapped and welded. After the ends of sections are machined for a welding groove the contact between layers is so uniform that it is difficult to detect the layers

After all layers have been added, the ends are machined for a welding groove. The contact between layers is so uniform that it is difficult to determine from visual inspection that the vessel is not made from solid steel plates. With the ends machined, the sections are assembled by welding in a manner similar to the way sections of solid-wall vessels are joined.

The multi-layer vessel has a number of attractive features. The type of construction gives it wide flexibility with which it can overcome the present limits of size and weight in the construction of thick single-piece equipment for high pressures. The minute scrutiny which can be given the thin layers of steel entering the fabrication of such vessels is bound to reflect itself in the quality of the product. Extremely important is the fact that the inner layer can be of expensive corrosion resistant material whereas the outer, load-carrying layers can be of the more economical material. The lower cost of equipment necessary for the fabrication gives it further advantage over the thick solid-wall construction.

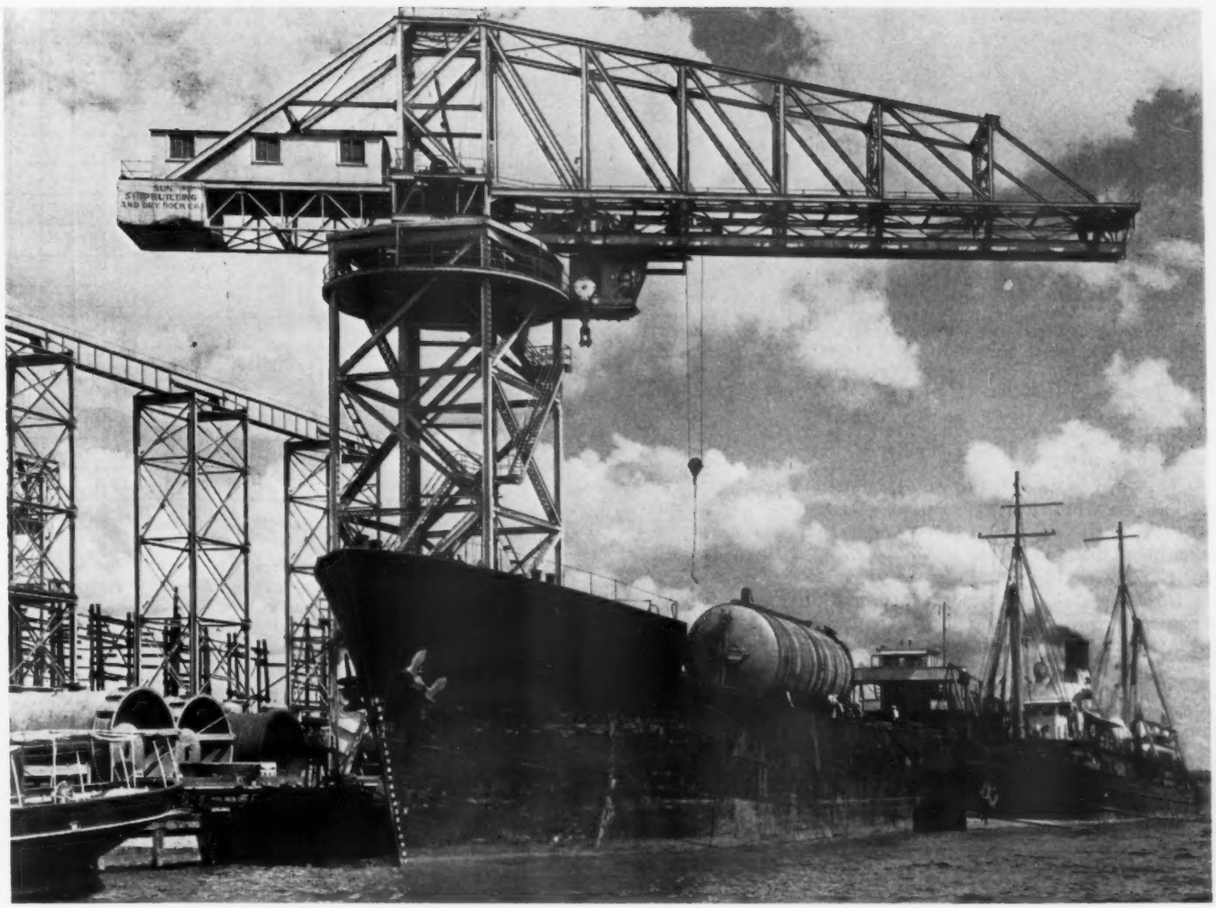
Tests have shown that the failure of multi-layer pressure vessels under pressure takes place without any shattering or fragmentation and with considerable deformation in contrast with thick solid-wall vessels. This is shown in Fig. 2 and Fig. 3. Further tests have shown that stress relieving of these vessels is not necessary and is not recommended. It has been shown definitely that when at least one of the surfaces to be welded is made up of a multiplicity of layers, the circular joints do not and cannot set up internal stresses that would make stress-relieving necessary.

In 1931 two vessels of multi-layer construction were built for destruction tests and provided with reinforced openings in the cylinder and in one head. The cylinder and heads of these vessels were constructed of 12 layers of steel of varying thicknesses totaling about 3.85 inches. The vessels had an outside diameter of 27 inches and were about nine feet between heads. When tested to destruction, they failed at hydraulic pressures of 19,100 and 20,200 pounds per square inch. These pressures cor-

Table 1

Average Physical Properties of Steel in Annealed and Unannealed Pressure Vessels

	0.2% set yield strength (lb./sq. in.)	Ultimate yield strength (lb./sq. in.)	Elongation in 8 inches %
Unannealed	39,770	58,845	29.5
Annealed	37,670	56,260	32.3



LOADING at Sun's Plant a Fractionating Tower for Water Shipment. This tower is 18 ft. diameter. 3 other towers are stored on the Pier awaiting to be loaded. These are 14′ 8″ diameter x 83′ 0″ long, too large for rail shipment.

This is an illustration of Sun's facilities to fabricate and ship massive structures required by the Oil Refinery and kindred industries.

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SUN SHIPBUILDING & DRYDOCK COMPANY

CHESTER, PENNSYLVANIA

Figs. 2 and 3. A contrast in destructive rupture tests. Above is a multi-layer vessel which failed without shattering and with considerable deformation. Below are the fragmented pieces of a solid-wall vessel. The latter vessel was 33¼ inches in diameter, 12 feet long, with 3⅝-inch walls. The multi-layer vessel with 12 layers and 3.85-inch wall was 27 inches in diameter and 9 feet between heads

respond to maximum stresses of 58,000 and 62,000 pounds per square inch. Both vessels were made of ordinary boiler-steel plates.

In 1937 two additional layer vessels were tested to destruction to establish further information on the design of large openings and on the effect of stress-relieving temperatures. Both vessels were built of 12 layers, ¼-inch thick, wrapped around an inside layer ½-inch thick, giving the vessels a total wall thickness of 3½ inches. Both vessels had an outside diameter of 26 inches and were 8 feet 8 inches in over-all length. They were built of layers coming from identical sheets of steel. Stress relief in one was carried out at 1150° F. for three hours followed by cooling at 80° F. per hour. The other was not stress-relieved.

The pressure-water-column readings for each vessel are given in Fig. 4 and 5. Pressures and stresses at which the yielding and failure of the two vessels occurred are shown in Table 2. It should be pointed out that the stresses at yield and failure shown for the stress-relieved vessel are very close to the yield and ultimate strength of the steel tested independently after it had been stress-relieved. On the other hand, the stresses at yield and failure for the unrelieved vessel are somewhat higher than the yield and ultimate strength for the steel in the corresponding state.

It is believed that this is due to the effect of the imposition of compressive stresses on the outside layers during the construction of the vessels, and these were not affected by stress-relieving in the stress-relieved vessel. Inasmuch as the outside layers take on load less rapidly than the inside layers, it is to be expected that higher values might be shown by the latter vessel than the former, which has had these compressive construction stresses, as well as the strength of the steel, reduced by the stress-relieving operation.

On the basis of the foregoing tests, a considerable number of multi-layer vessels have been built and put into service. The first of these vessels has operated since 1931 at 2000 pounds per square inch. Fig. 6 shows an accumulator under a test pressure of 6500 pounds per square inch. This vessel weighs 94,000 pounds, is 56.6 inches in diameter, 30 feet 9 inches long, and has a wall thickness of 5.3 inches. It is operating now at 3250 pounds per square inch.

Table 2

Stresses at Yield and Failure in Annealed and Unannealed Pressure Vessels

	0.2% yield by water column		Burst point		Increase in average diameter at failure (inches)
	Pressure (lb./sq. in.)	Stress*	Pressure (lb./sq. in.)	Stress*	
Unannealed	13,400	43,100	18,800	60,400	2.15
Annealed	11,500	37,000	17,375	55,900	3.54

* By means of the formula pDm/2t.

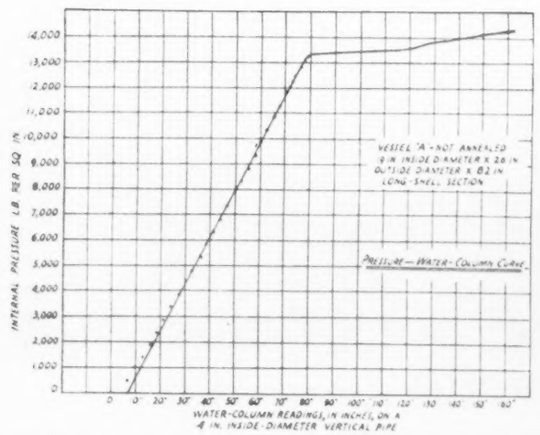

VESSEL "A"-NOT ANNEALED
9 IN. INSIDE DIAMETER X 26 IN. OUTSIDE DIAMETER X 8.2 IN. LONG-SHELL SECTION
PRESSURE—WATER-COLUMN CURVE
INTERNAL PRESSURE LB. PER SQ. IN.
WATER-COLUMN READINGS, IN INCHES, ON A 4 IN. INSIDE-DIAMETER VERTICAL PIPE

Fig. 4. Pressure vs. water-column readings for a multi-layer vessel which was not stress relieved

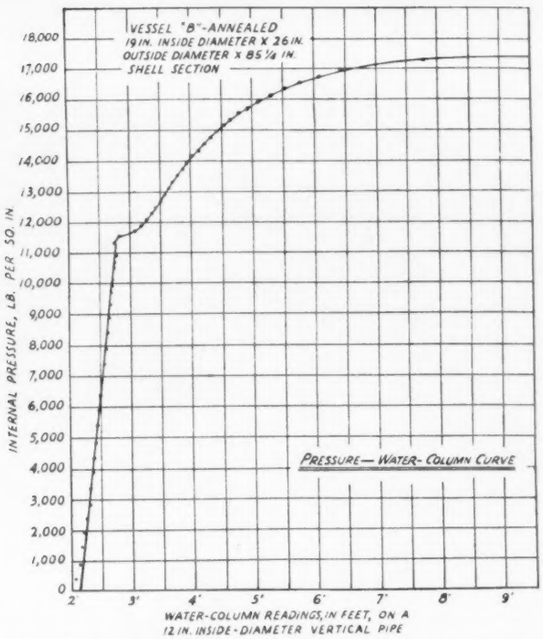
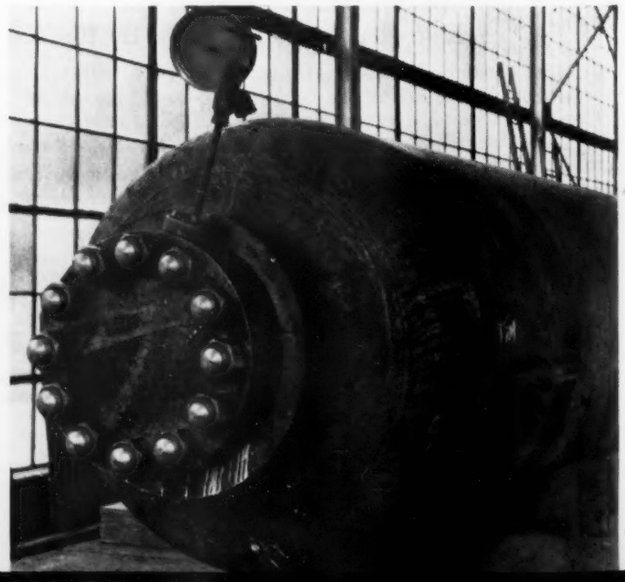
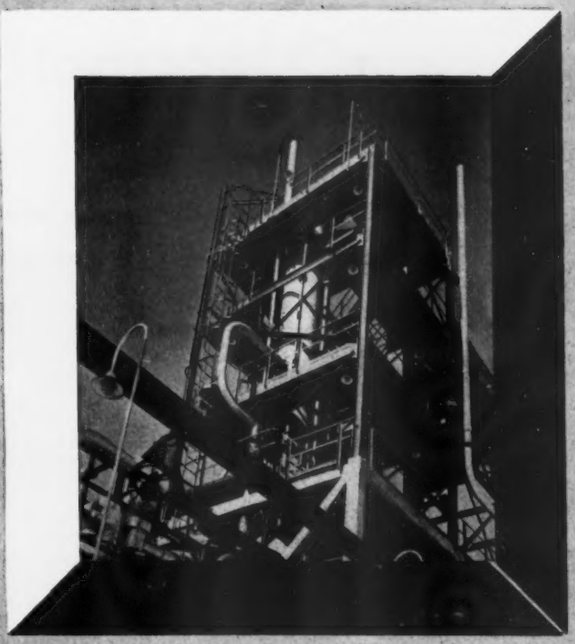

VESSEL "B"-ANNEALED
19 IN. INSIDE DIAMETER X 26 IN. OUTSIDE DIAMETER X 85¼ IN. SHELL SECTION
PRESSURE—WATER-COLUMN CURVE
INTERNAL PRESSURE, LB. PER SQ. IN.
WATER-COLUMN READINGS, IN FEET, ON A 12 IN. INSIDE-DIAMETER VERTICAL PIPE

Fig. 5. Pressure vs. water-column readings for a multi-layer vessel which was stress-relieved. Pressure at yield and failure of this vessel was lower than for the unrelieved vessel

Fig. 6. An accumulator of multi-layer construction under a test pressure of 6500 pounds per square inch. This vessel is 30 feet 9 inches long, 56.6 inches in diameter, and weighs 94,000 pounds. It has a 5.3-inch wall





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Renew Efforts to Reduce Tank Car Vapor Losses

This article is a condensation of a paper presented before the Natural Gasoline Association of America meeting in Tulsa May 3-5.

By J. R. Jarvis *

EFFORTS to develop methods for reducing vapor losses from tank cars are being revived. The value of such methods has long been realized but because of the difficulties involved and high costs of equipment earlier projects were dropped. Unloading losses result from the necessity of venting the pressure off in order to open the bottom outlet valves.

Tank car owners, who in many cases were other than the ones to be directly benefited, frowned on the high cost of equipping cars. It was also doubtful as to whether it would be possible to get the consignee to use these devices even if they were developed and installed on the cars. Again it was generally understood that refiners and blenders at that time did not want the products that were vented off of the cars and the fact that some outage was sure to be reported in many cases the impossibility of the shipper being able to check outages led to many abuses. The chief reasons for reviving the matter are:

First, it has been proved that vapors wasted in venting cars constitute a part of the natural gasoline necessary to give desirable characteristics to motor fuel.

Second, the industry is becoming more safety minded and recognizes more clearly the potential fire and explosion hazards where gasoline is vented.

Third, the Bureau of Explosives is beginning to take an active interest and is investigating and suggesting ways to prevent both the waste and the hazards.

Fourth, methods and apparatus to prevent these wastes and hazards are now available and car owners may equip their existing cars with various kinds of equipment at almost any price from $10 to $450 per car.

At present many cars are equipped with pipe caps making it necessary to vent before connections can be made to the car. Also these caps may be and sometimes are accidentally taken off without venting and result in losses of gasoline. The simplest way to make all cars safe from this hazard would be the installation of stop cocks or special plugs on all cars. This can be done for less than $20 per car. If the rules of the American Association of Railroads would permit this the greater portion of the whole problem would be solved at small cost to the car owner. However at present if this is done there must be a costly housing placed around the pipe and stop cock that makes it prohibitive from an economic standpoint. Consequently few of these have been installed.

Fifth, in the past few years small high speed rotary turbine pumps have been devised that easily handle highly volatile liquids like propane and butane from storage to car and from car to storage through an overhead loading system with easy continuous flow. With these pumps the heavier naturals and motor fuel can be more easily handled than in the liquefied gas industry. Loading and unloading with air or gas pressure, is speedy, and is in use at many unloading points at present.

Sixth, a canvass of some of the principal refiners, railroads and terminal companies in the Mid-Continent area reveals that there is a general expression of willingness to co-operate from a safety and saving standpoint, in fact they have been searching for several years for effective means to accomplish this very thing.

Seventh, there is also a feeling among the industry that it is better for the gasoline manufacturers, car owners, refiners and other interested parties to work out some economical method of taking care of this situation among themselves rather than have some regulatory agency come forward with drastic rules and regulations and requirements that will be costly to all concerned.

Due to this entirely different viewpoint the industry can now revive this outage problem with the firm belief that it will be favorably regarded by all parties concerned.

Car Owner's Viewpoint

The loading and unloading of natural gasoline without venting the cars, without removing the dome cover or without opening the outlet valve will result in a great saving in maintenance expense to the tank cars. Safety valves and outlet valves will seldom have to be ground, dome cover gaskets and outlet cap gaskets will not have to be renewed. Bolts, nuts, caps, dome covers, outlet caps and chains will last practically the life of the car. In fact some who have been using this system find they can remove the bottom outlet leg altogether. Due to reduced exposure the inside of the shell of the car will not rust as much as formerly. Again those who have used this system tell us that they do not have to clean out their cars any more.

Now if a new system of loading and unloading, that will eliminate waste and hazards and reduce loading and unloading time can be accomplished with an expenditure of $20 per car to the car owner and $20 per car to the shipper and $20 per car to the consignee it presents a picture that all could look upon with pleasure. This is a condition that can very probably be worked out by co-operation between the industries and the regulatory bodies.

There has recently been offered to the industry a system of loading and unloading cars that substitutes bushings and plugs for the caps now on a majority of the gasoline cars. The plugs are removed and retained by means of special fittings that also form connections to the loading and vapor lines and are replaced by the same means before the fittings are removed from the car without the loss of any vapors. The liquid level in the car is ascertained by means of a slip gauge that also has a thermometer attached that can be read while the thermometer is still enclosed and under pressure. This slip gauge thermometer and the special fittings are all removed from the car and retained at the loading and unloading racks. A cap, attached by chain to the car, is screwed down in the bushing over the plug and can be sealed.

If this system were to be adopted by the industry in general and all unloading racks had the special equipment the cost per car handled would be less for the unloader than the loader, or less than $6.00 per average car handled. The main advantage of this system is that it provides a more tamper proof closure.

*Lone Star Gasoline Co., Dallas.

Stainless Steel Applications Which Reduce Corrosion

By K. E. Luger*

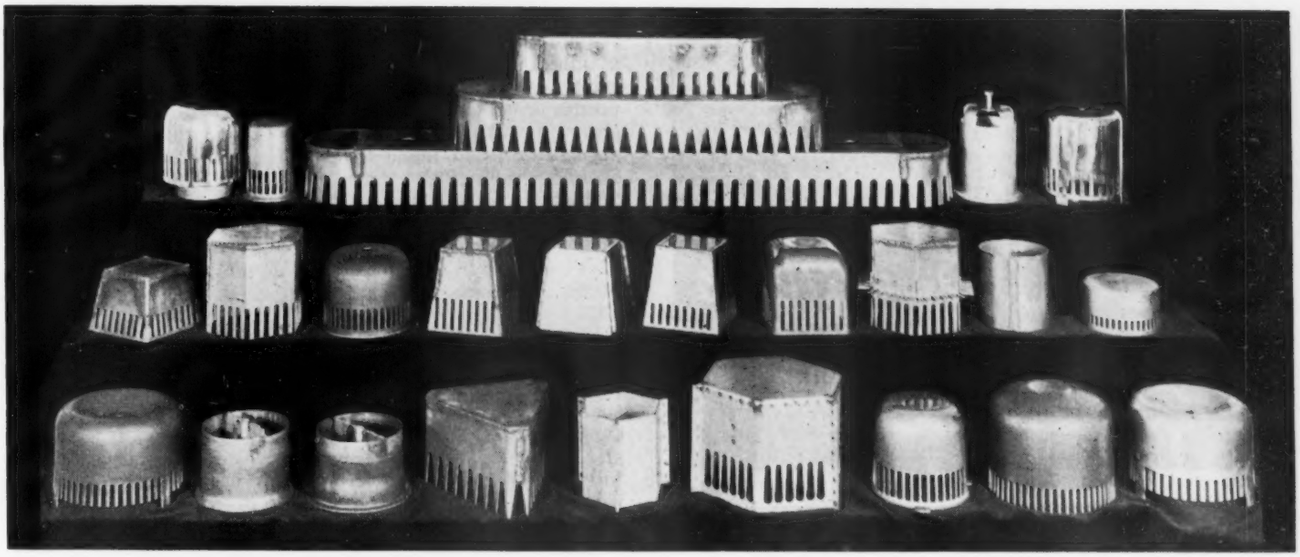

Fig. 1. Pressed and welded light gauge stainless steel bubble caps are available in a wide variety of designs. Courtesy Fritz W. Glitsch & Sons, Dallas

ABSTRACT

Recent applications of stainless steel to refineries include the extremely light weight complete bubble tray, liners for existing steel vessels, and welding rod for the salvage of worn steel parts and for the protection of new steel parts against both erosion and corrosion.

Bubble tray costs have been brought down by reduction in thickness to as low as .0625 inch. Necessary stiffness and strength is obtained by special design and fabrication. Immunity to corrosion, reduction in coking, and lessening of the labor for decoking resulting from lightness of weight, are the main advantages gained.

Stainless steel liners have been put in over 100 vessels in the field in the past two years, it is estimated. Welding salvage has been used considerably but without much interchange of information on experience and applications. Among the applications are building up valve bodies, hot oil pump plungers, and valve parts, lining heat exchanger heads, tube sheets, spools, vapor line ends, bends, and junction boxes.

FOR a period of years the petroleum refining industry and the steel producers have co-operated wholeheartedly in the development of special materials of construction for the processing of petroleum products. When the refinery engineers desired a metal of certain properties to meet definite requirements, the metallurgists of the steel producers tackled the problem and endeavored to fill the need. Conversely, when the steel industry developed a new alloy, the refineries were among the first to determine where in their processing the new material could be economically applied. This excellent co-operation has resulted in widespread application of the corrosion and heat resisting alloys to refinery equipment to the mutual benefit of both producers and users.

It has been estimated that the annual toll for corrosion in refinery equipment amounts to millions of dollars. To curtail this as much as possible, refinery engineers, well known for their progressiveness, have adopted stainless and so-called semi-stainless alloys to a wide variety of applications. Undoubtedly the best known of these applications are those where the tonnage is also the greatest. Seamless tubes containing 2 per cent and upwards of chromium are widely used for still tubes, vapor lines, hot oil transfer lines and heat exchanger tubes. For application where ordinary steel tubes would have short life due to high temperature corrosion by the petroleum products or due to oxidation, the use of the chromium alloys has proven very economical.

The stainless alloys are today the accepted materials

*Carnegie-Illinois Steel Corp. Presented at the Oil World Exposition in Houston, April 24-29.

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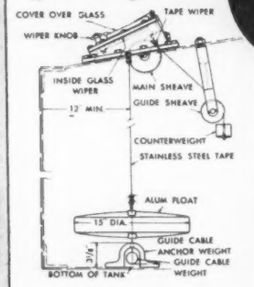
... for LOW or HIGH PRESSURE TANKAGE...



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WRITE FOR QUOTATIONS

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for refinery valve trim. Here the martensitic alloys (capable of being hardened by heat treatment) are generally used. However, recently, there has been a trend towards the use of the austenitic chromium nickel alloys, 18-8, for trim for valves for the handling of the code (temperature of 400 degrees F. or lower as a rule) refinery products, due to the better resistance of these alloys to the reducing acids occasionally present in the products when they are at temperatures below the dew point of water. For the handling of products from the catalytic polymerization units some of the valve trim has been of the 18-8 Moly, Type 316 alloy. This material, which contains 2 to 4% of molybdenum in addition to the usual 18% of chromium and 8% of nickel, is perhaps the most resistant, of the so-called stainless steels, to wet corrosion when the acids present are reducing in character. It is believed that as the corrosion resisting properties of this 18-8 Moly alloy become better known to refinery engineers, its use will become more widespread.

Pumps of various kinds are now liberally fitted with stainless steel. The pump rods are commonly of the austenitic 18-8 alloy, whereas the pump shafts of centrifugal pumps are generally made from the martensitic straight chromium alloys. Plungers for hot oil pumps have been successful when made from 4.6% chromium molybdenum seamless tubing, also when made from 18-8 tubing. Valves and valve ports of the plnnger type and the piston type of hot oil pumps are frequently made of the stainless alloys. In some cases the pump body itself has been made of these alloys. In the case of the centrifugal hot oil pump, stainless steel shafts, impellers and liners for the bodies are often used when handling corrosive crudes.

Other generally adopted applications of the stainless steels include liners for nozzles of towers; gaskets; orifice plates; thermocouple wells; baffles; supports and spacers, as well as the tubes of heat exchangers; tray support angles for bubble towers; floats for control valves, and furnace dampers. They have also been very successfully used for high temperature air preheaters on stills as well as flue gas recirculation systems. It is believed that the application of the heat resistant steels for high temperature air preheaters will increase materially once refinery engineers appreciate the marked improvement that has been made in this type of equipment during the last few years.

Stainless steels have been proved economical for the prevention of corrosion in systems used for the removal of hydrogen sulfide and mercaptans from refinery gases and vapors. These steels are beginning to be applied for such uses as guy wires on large torches or flares; sheave wheels for tank float gauges; cables for swing lines; small size pipes for control and instrument lines; discs and seats for vapor valves on tanks.

The stainless steel bubble cap is no stranger. It has been used in fairly large volume; both in natural gas plants handling sour gases, in the absorbers and stabilizers in the refineries and in the refinery bubble towers. Its principal advantages, in addition, of course, to its outstanding corrosion resistance, is the lack of breakage of the teeth or slots and its extreme lightness. The lack of breakage of the teeth likely will have a particular appeal to those refineries desiring sharp fractionation. Another advantage to be obtained, if desired, is a greater number of teeth or slots per cap, thus allowing more intimate mixture of the vapor and the liquor on the trays. This is due, of course, to the thinness of the material and to the fact that the slots or teeth can be easily punched. The thin cap also allows for more useable area on the tray, since there is less metal in the wall of the cap to take up dead area.

Stainless steel bubble caps .0625-inch thick have been used in bubble towers handling cracked West Texas crude for over eight years with no apparent evidence of corrosion. They have been made in a wide variety of designs as evidenced in Fig. 1.

Among the more recent applications of stainless steel to the refineries has been the extremely light weight, relatively inexpensive, complete bubble tray for the hot end of the system. In the past, while it was generally ac-

knowledged that the best way to combat corrosion by hot petroleum products was to use stainless steel, the cost of items such as bubble trays, down-comers, rain decks, baffles and weirs of stainless steel, when made in accordance with conventional design, was such as to exclude their use except in those cases where a severely corrosive crude was being handled. However, by applying the experience of the aircraft and the rail car builders in light weight design, the cost is brought down to what is believed to be a fairly competitive figure.

The stainless alloys having 11% or more chromium appear to be particularly immune to corrosion in the temperature range 1200 degrees F. to 400 degrees F. in petroleum refining processing which makes the use of thin, relatively inexpensive sections possible inasmuch as little, if any corrosion allowance need be added. Necessary stiffness and strength can be obtained using thickness no greater than .0625-inch by the application of skill in design, engineering and fabricating.

The principal advantage of the stainless trays is, of

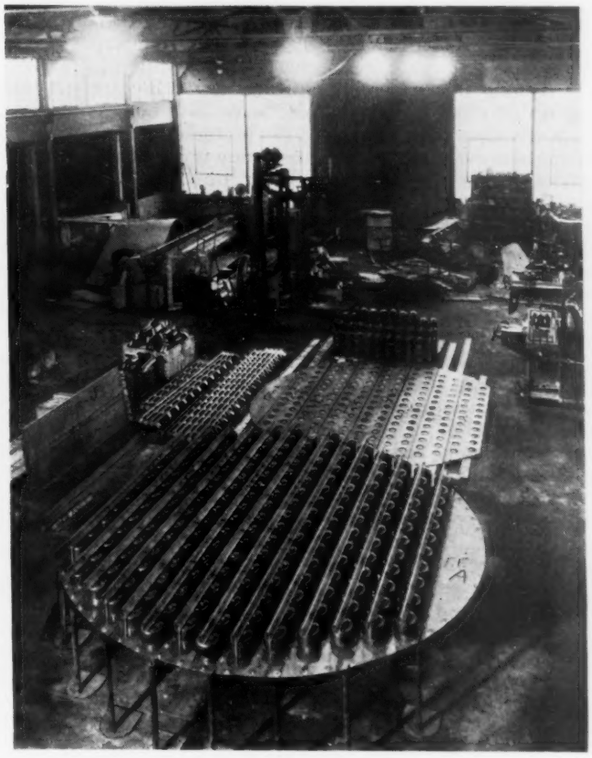

Fig. 2. Bubble tray, risers, bubble caps, and hold-down bars for an 11-foot diameter tower weighing only 800 pounds. It is made from 1/16-inch 17% chromium stainless steel

course, the extensive life due to the corrosion resistance. Breakage or spoilage should be at a minimum due to the tough and ductile properties of the material. Coking and labor for decoking will be appreciably less due to the fact that the smooth, dense surface does not allow the coke to get a "toe hold". The extreme lightness makes for ease of installing and removing the trays. The lack of hazard to the workman when handling the light tray sections should appeal particularly to the safety men.

A bubble tray for an 11 foot tower complete with bubble caps, risers, hold down bars, down-comers and weir fabricated of .0625-inch thick 17% chromium and supporting trusses fabricated of .078-inch thick 17% chromium as illustrated in Fig. 2 weighs only approximately 800 pounds. The tray complete with supporting trusses but not including the caps, risers or hold down bars weighs approximately only 300 pounds. It will support a 4-inch liquor level with a maximum deflection of 1/8-inch. The rupturing load of the individual supporting trusses was designed with a factor of safety of five. This tray can be made ap-

New Patents

Compiled by R. E. Burnham, patent and trade-mark attorney, 511 Eleventh Street, NW, Washington, D. C., from whom copies may be obtained at rate of 25c each. State number of patent and name of inventor when ordering.

April 25, 1939

REFINING

Solvent refining hydrocarbon oil—Louis P. Evans, Beacon, N. Y., assignor to Texas Co. Filed Feb. 19, 1937. No. 2,155,644.

Separation of wax from oil—Louis P. Evans and Howard H. Gross, Beacon, N. Y., assignors to Texas Co. Filed Feb. 24, 1937. No. 2,155,645.

Treatment of gaseous fuels—Lebbeus C. Kemp, Port Arthur, Tex., assignor to Texas Co. Filed Feb. 1, 1938. No. 2,155,663.

Method of preparing lubricating oils—Cary R. Wagner, Chicago, and Warren A. Raine, Evanston, Ill., assignors to Pure Oil Co. Filed July 1, 1935. No. 2,155,745.

Process of distilling tar—Edgar T. Olson, Marquette, Mich., and Raphael Katzen, Phelps, Wis., assignors to Northwood Chemical Co. Filed May 17, 1938. No. 2,156,158.

Recovery of liquid hydrocarbons from well fluids—George S. Bays, Tulsa, Okla., assignor to Stanolind Oil & Gas Co. Filed Oct. 18, 1938. No. 2,156,234.

Motor fuel—Johan C. D. Oosterhout, Port Arthur, Tex., assignor to Texas Co. Filed June 25, 1935. No. 2,155,678.

May 2, 1939

REFINING

Process of refining oil—Benjamin Clayton, Houston, Tex., assignor to Refining, Inc. Filed Oct. 8, 1937. No. 2,157,068.

High pressure lubricant—Floyd L. Miller and Charles F. Smith, Elizabeth, N. J., assignors to Standard Oil Development Co. Filed Nov. 21, 1933. No. 2,156,265.

Process for obtaining oxidation products from hydrocarbons—Eger V. Murphree and Edward D. Reeves, Baton Rouge, La., assignors to Standard Oil Development Co. Filed Nov. 10, 1933. No. 2,156,266.

Lubricant—Hugh S. Cooper, Shaker Heights, and Vivian R. Damerell, Cleveland, Ohio, assignors to Cooper Products, Inc., Cleveland. Filed May 3, 1934. No. 2,156,803.

Lubricating oils—Bert H. Lincoln and Gordon D. Byrkit, Ponca City, Okla., assignors to Lubri-Zol Development Corp. Filed Feb. 15, 1936, and July 10, 1935. Nos. 2,157,078 and 2,157,079.

Process of separating mercaptans contained in a hydrocarbon liquid—David L. Yabroff, Berkeley, and Ellis R. White, Albany, Calif. Assignors to Shell Development Co. Filed Feb. 8, 1937. No. 2,156,577.

Polymerization of olefins—Franklin A. Bent, Russell W. Millar, and Simon N. Wik, Berkeley, Calif. Assignors to Shell Development Co. Filed Dec. 23, 1935. No. 2,156,718.

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Hanlon Buchanan, Inc. R-205
International Lubricant Corp. ....
Johnston & Jennings Co. R-222
Kellogg Co., M. W. R-210
Lummus Co. R-215
Monsanto Chemical Co. ....
Natural Gasoline Assoc. ....
Perco, Inc. ....
Petroleum Rectifying Co. of Calif. ....
Shand & Jurs Co. ....
Stratford Development Corp. R-209
Sun Shipbuilding & Dry Dock Co. R-217
Taylor Instruments Companies ....
Texaco Development Corp. ....
Universal Oil Products Co. 26
Wyatt Metal & Boiler Works R-213
Zerwer, A. G. P. R-222

Fig. 3. Light weight 17% chromium stainless steel bubble tray, risers, bubble caps and down comers for a 12½-foot diameter tower

preciably stiffer, if desired, by adding only slightly to both the weight and cost by merely deepening the supporting trusses.

Fig. 3 shows another design of bubble tray and the supporting trusses. In another design the required rigidity is obtained in .0625-inch thick 17% chromium by merely forming the sheet into channel sections as shown in Fig. 4. This tray does not require supports underneath. From these photographs it can be seen that the relatively inexpensive stainless steel tray can be fabricated in a wide variety of designs.

Stainless steel liners for reaction chambers, flash towers, evaporators, bubble towers, vacuum towers and heat exchanger shells have been used for some time. There is no question but that properly applied, they fully protect the steel from the high temperature corrosion and are almost wholly free from trouble. When building a new tower stainless steel liners can be satisfactorily applied by the fabricating shops by a variety of methods. Generally a low carbon 12% chromium stainless steel sheet or strip is used although 18-8 has also been successfully applied and used. The life of the liners appears to be practically unlimited, since the high chromium content apparently gives perfect resistance to corrosion and prevents any contact of the oils or vapors with the steel shell.

Liners in Old Vessels

Recently there has been a rapid development in the application of the sainless steel liners to existing steel vessels. Towers lined in the field nine or more years ago are still giving entirely satisfactory service. While it is not claimed that a field lined job can be done as cheaply nor as perfectly as a tower lined in a fabricating shop; nevertheless, it appears to be a well established fact that field lining can be done both satisfactorily and economically. It is estimated that in the last two years alone over 100 vessels have been field lined with stainless steel.

There are numerous methods used to apply the liners. The most common method consists of using .08% carbon maximum 11% to 13% chromium in strips of from 0.125 to 0.070-inch thick. The width of the strip is generally limited to that which can be conveniently taken in through a manway, but is generally no wider than 24 inches. The lengths are limited to 5 or 6 feet for ease in fitting. These strips are punched or drilled with holes ⅝ to 1 inch in diameter (the more experienced the welder is, the smaller the holes, and the thinner the material; however, the ⅝-inch diameter is considered to be the minimum) on various centers of from 3 to 5 inches (the higher the operating temperature of the vessel, the smaller the "center" of the holes). They are then rolled to fit the diameter of the tower.

In the case of domes of towers, the stainless strip is generally first cut to make "orange peel" segments, then punched or drilled and finally shaped. Application consists of snugly fitting the liner against the shell, which must be thoroughly clean, and then welding the periphery of each of the holes to the steel shell, cleaning the weld of slag, sealing each hole, and finally fastening and sealing the edges of the individual sheets. Due care must be taken to assure that no imperfections in the welds exist to allow oil or vapors to get back between the shell and the liner, and that the liner is attached to the shell at sufficiently short intervals to withstand the stress occasioned by expansion and contraction when the vessel is coming up to temperature and when being taken off stream. For those who do not wish to undertake this lining work themselves, there are available contracting firms who are equipped to do the work on a turn key basis.

Stainless Welding Rod

Another application of stainlesss that is of particular interest is the use of 18-8 welding rod for the salvage of worn steel parts and for the protection of new steel parts against both erosion and corrosion. Apparently most refiners are now doing some of this stainless weld overlay work, but it appears that there has been little or no exchange of information, since one refinery will be using the method for some purposes but completely neglecting numerous applications used by other refineries.

Among the uses of the 18-8 weld overlay are the building up of eroded, corroded or "wire cut" bodies of control or flow valves; building up of the plungers of hot oil pumps; facing flanges; building up the bonnets of valves; lining of spools, vapor line ends, bends, junction boxes, headers and plugs; lining and building up pump bodies and valve parts on pumps; lining heat exchanger heads and tube sheets; building up of both the plugs and bodies of plug cocks; lining of check valve bodies; and lining inside the stainless trim on the gates of gate valves. The resistance to erosion and corrosion of these 18-8 weld overlay surfaces is truly remarkable.

Since most of the weld overlay work requires finishing by machining, it is desirable to use a weld rod giving the most free machining weld bead. Unfortunately, the regular free machining 18-8, Type 303, does not lend itself well for use as weld rod and therefore 18-8 Ti., Type 321, containing roughly 0.5% titanium, appears to be the best suited. The titanium burns out when passing through the arc and the weld bead in consequence contains microscopic particles of titanium oxide and nitride which appear to act in the same way to give free machining qualities to the material as do the sulfide inclusions in free machining Bessemer screw stock.

Further co-operative effort on the part of the petroleum refining engineers and the steel metallurgists is certain to bring forth developments of new or different applications of stainless steels. Successful applications are much more numerous at present than was the case only a few years ago. The future should see the stainless and heat resisting steels growing in importance and usefulness in refineries to the end that marked reduction in the annual cost of corrosion of plant equipment will be achieved.

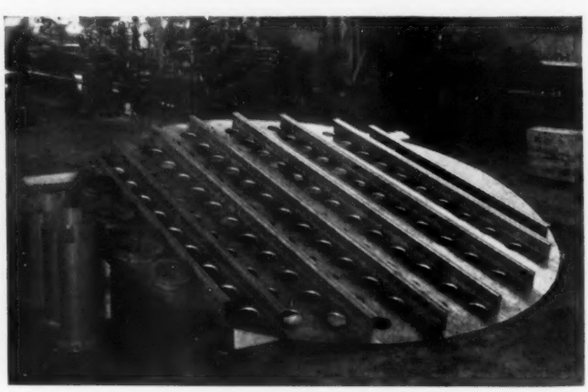

Fig. 4. Bottom view of a bubble tray of the channel design. Required rigidity is obtained by merely forming the sheet into channel sections

Federal Wage-Hour Law Again in the Spotlight

Early this year when 44 state legislatures were in session, there were expectations that many would enact wage-hour laws applying to local businesses the provisions contained in the federal law. This would have made it unnecessary for local oil companies to decide whether they were "in interstate commerce" and the state law would have covered them any way.

So far, however, no state wage-hour law has been enacted and about two-thirds of the state legislatures have adjourned. This has focused attention again on the federal law.

Few rulings have been made on specific cases in the oil industry. But there is a bill pending in Congress, backed by the Wage-Hour Division, which would empower the administrator to make binding interpretations of the law. The bill would also exempt entirely all employes drawing $200 or more per month.

In this article, N. P. N. tells how some oil companies have interpreted the law and presents a resume of the more important rulings affecting oil which have been issued during the first six months of the federal wage-hour law.

INTEREST in the federal wage-hour law has dwindled as the months rolled by since it became effective last October 24—but this may be changed soon.

Wage-Hour Administrator has clung to his view that the law gives him no authority to make binding regulations. In most instances he has declined to make specific rulings, usually replying, "If you think you are under the law—comply with it."

This tossed back to the individual employer the question of determining whether or not his operations were "in interstate commerce" and therefore subject to the federal law.

Failure to get specific information on their status under the law dimmed the interest of many employers. Another factor early this year was the fact that 44 state legislatures were in session, with indications that many states would enact their own wage-hour laws patterned after the federal law. Such state laws, of course, would apply to all local business, thus making moot the question of whether the employer was engaged in "interstate commerce."

However, no state legislature so far has enacted a wage-hour law, according to latest available information. And about two-thirds of the 44 in session this year have adjourned. Wage-hour bills are still pending in several states, but indications are that few, if any, will be enacted.

As more and more state legislatures adjourn the spotlight swings back to the federal wage-hour law, again raising the question for local oil companies to decide—"Are you engaged in interstate commerce or the production of goods for interstate commerce?"

Another factor in the reawakening of interest in the federal wage-hour law is the fact that pending in Congress now—with excellent chances of being passed—is a bill which gives the wage-hour administrator authority to make binding regulations under the law. If this bill is passed, the administrator would have power to make interpretations which would stick—interpretations which the employer could rely on as a defense, even though the administrator "erred" in such rulings.

Embodied also in this bill, which has been favorably reported in the House and is slated for early action, is a provision—recommended by the wage-hour administrator—which would exempt from the maximum-hour provisions any employe who was paid a guaranteed wage of $200 or more per month.

Concerning this $200 exemption, Chairman Norton of the House Labor Committee pointed out that much of the objection to the wage-hour law has resulted from its application to "white collar" workers—"men and women engaged in work not of a clearly administrative or executive nature but which frequently requires overtime work." Mrs. Norton cited as examples bookkeepers, private secretaries and "high-salaried officer workers in the main." As the law now stands, such workers would not come under the exemption granted to executive, administrative and professional employes.

Because of the oil industry's high wage scale, the minimum wage specified in the law—25 cents per hour—has caused employers no concern. But the provision that employes shall be paid time-and-a-half the "regular rate" of pay for each hour worked in excess of 44 per week, has hit some employers all the harder because of their high wages.

Of course, many oil companies—especially in the industrialized sections—have work weeks of 44 hours or less. So, the wage-hour law has not affected them generally. But there are some occupations where a work week longer than 44 hours was customary in the oil industry. And this was especially true in the rural sections where the farmer's long hours were reflected in the hours of store clerks, truck drivers and other types of workers.

This led some oil companies who had employes, with work weeks of 54 hours or thereabouts, to readjust their wage rates so that the employe would receive the same weekly or semi-monthly pay check but could continue working the same number of hours. So far as is known this method has not been challenged by the Wage-Hour Division.

A few specific rulings on cases in the oil industry have been made, but still without a definite answer are such questions as: Are bulk plants and truck drivers hauling out of them in "interstate commerce" and so subject to the 44-hour week specified in the law?

Oil companies differ on their answers to this question.

Some have adopted the view that bulk plants are under the law (and sharing this view are several large refining companies). But there is at least one major company which took the attitude that "interstate commerce" ends when the tank car comes to rest on the siding. Some companies have adjusted their operations to eliminate the few instances in which their truck

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drivers were crossing state lines in making their deliveries.

Hubert Fuller, Cleveland attorney who is general counsel for Ohio Petroleum Marketers Ass'n., is advising Ohio jobbers that only their employes actually engaged in unloading the tank car (shipped in from another state) are in "interstate commerce". Any employe handling the products after they have once come to rest in the storage tanks is *not* in "interstate commerce" and therefore not subject to the federal law, Fuller holds, relying on the U. S. Supreme Court's decision in *Atlantic Coast Line Railroad vs. Standard Oil Co. of Kentucky* 275 U. S. 257. He points out, however, that this decision was 12 years ago and involved freight rates. (See N.P.N., Oct. 12, 1938, for full discussion of Fuller's views).

Writing in NATIONAL PETROLEUM NEWS of Dec. 7, 1938, Fayette B. Dow, general counsel for the National Petroleum Ass'n., also cited this case but pointed out that since the past several years there have been Supreme Court decisions broadening the meaning of "interstate commerce," and upholding Congress' power to regulate local matters which "affect" interstate commerce.

Getting down to the point of whether a jobber's bulk plant is in "interstate commerce" and therefore under the wage-hour law, Leo C. Lindemann, counsel for Westland Oil Co., Minot, N. Dak., cites a ruling of the wage-hour administrator on "wholesalers" as indicating that the official regards jobbers as under the law (See N.P.N., Feb. 22, 1939). Lindemann quotes the administrator's ruling, as follows:

"Most likely, however, the courts will hold that employes employed in connection with the wholesale sale of goods brought in from outside the state are engaged in the stream of commerce and are entitled to the benefits of the (wage-hour) act, whether or not the goods are sold in the original package. It is our opinion that wholesalers purchasing their goods from outside the state should comply with provisions of the act."

Although application of this "stream of commerce" theory, voiced by the wage-hour administrator, might be stretched to include even filling stations, all oil companies—so far as can be learned—regard filling station employes as coming under the law's specific exemption for "local retailing." There is some doubt, however, about this exemption applying to so-called tankcar stations.

Some oil companies are going on the theory that bulk commission agents, making deliveries by tank trucks, are exempt from the law as "outside salesmen."

One big "IF" of the wage-hour law has been its application to truck drivers. There is no question that it covers drivers "in interstate commerce" as to minimum wages, but there is a specific exemption from the maximum-hours provision in the law for carriers subject to regulation by the Interstate Commerce Commission. Section 204 of the Motor Carrier Act purports to give the ICC authority to establish safety regulations, including hours of service, for private carriers (privately operated trucks), "if the need therefore is found." But the ICC has taken its time about deciding how far its jurisdiction extends over such drivers. Meanwhile, the Wage-Hour Division has asserted its authority over drivers' hours.

of drivers of privately operated trucks (such as those owned by oil companies, jobbers, distributors, etc.) until after Interstate Commerce Commission had determined the extent of its jurisdiction.

Although the ICC has not yet determined whether it has jurisdiction over these drivers, the Wage-Hour Division, unwilling to wait, apparently, until the ICC rules (it has an investigation under way), has recently issued a ruling declaring these employes under its jurisdiction as to hours. (N. P. N., March 29, p. 32.)

The "rub" here comes from the fact that ICC already has prescribed a maximum work-week of 60 hours for drivers of for-hire trucks. If this same maximum were applied to private trucks it would be 16 hours above the present maximum work-week under the Wage-Hour law, and 20 hours over the eventual maximum under that law.

But to go back, the Wage-Hour Division determined, last November, to begin issuing semi-formal rulings in the form of copies of letters which it sent out in response to the thousands of inquiries which began pouring in with regard to the act's application to specific cases.

While few of these affected the oil industry, as such, some had an application in the industry—such as the one (N. P. N. Nov. 16, p. 20) which held that employes of "wholesalers" are subject to the law, even though all the sales their employers make are within the state where their business is located.

About a month later the division determined what a "retailer" was under act, and, although there had been little doubt about it before, the definition apparently included service stations as "retail establishments", thus making employes at stations exempt from the federal law's provisions. (N. P. N., Dec. 14, p. 17.)

Later in December a ruling was issued temporarily defining "seasonal" industries (until certain industries could be designated as seasonal), which, under the act, were to be exempted from the 44-hour provisions of the law. It was clear from this definition that the fuel oil industry, although largely seasonal in character, was not to be exempted from the act's provisions. (N. P. N., Dec. 28, p. 8.)

Two rulings directly affecting the oil industry were made in response to a letter from Pennsylvania Grade Crude Oil Assn., (N. P. N., Jan. 4, p. 14). In one of them the division held that oil well pumpers are on duty during hours "actually worked", but that the fact they are on call at all times is not to be taken into consideration as 24 hours a day working time under the act.

The other answered a query as to need for keeping employe records on a week-to-week basis, ruling that, as records are kept day-by-day anyway, the assembly of them into weekly groups was not necessary, the only

All Industries Had 'Jitters' When Law Went into Effect

During the first two or three weeks after the wage-hour law became effective, all industries, were in something of a dither—and justifiably—as to how the administrator act would interpret it.

A few days before the act became effective, to be sure, there were some very general rulings—none of them applicable to the oil industry. Most of them were so vague as to leave a great deal of doubt concerning status of many workers.

These earlier rulings lent weight to the "dither" attitude of industry generally, too, since at one of his first press conferences, Andrews said: "It is evident . . . that Congress intended widest possible application of its regulatory power over interstate commerce." (N.P.N., Oct. 19, p. 17).

Then came rulings defining certain of the exempted employes—executive, administrative, professional and local retailing employes—and the description of the records which would be necessary. At the same time the ruling on overtime pay was issued—time-and-a-half for all work over the specified 44-hour week. (N.P.N., Oct. 26, p. 16-17).

But the rulings were general, and there was still doubt as to their application to specific cases. Alarm grew among business men generally as to how far this federal arm could reach. At about that time Andrews voiced the hope that state wage-hour laws would be enacted, which would cover those employes who, because of the local character of their occupations, were exempted from provisions of the federal law.

Late in October the Division announced it would withhold its determination of jurisdiction as to hours

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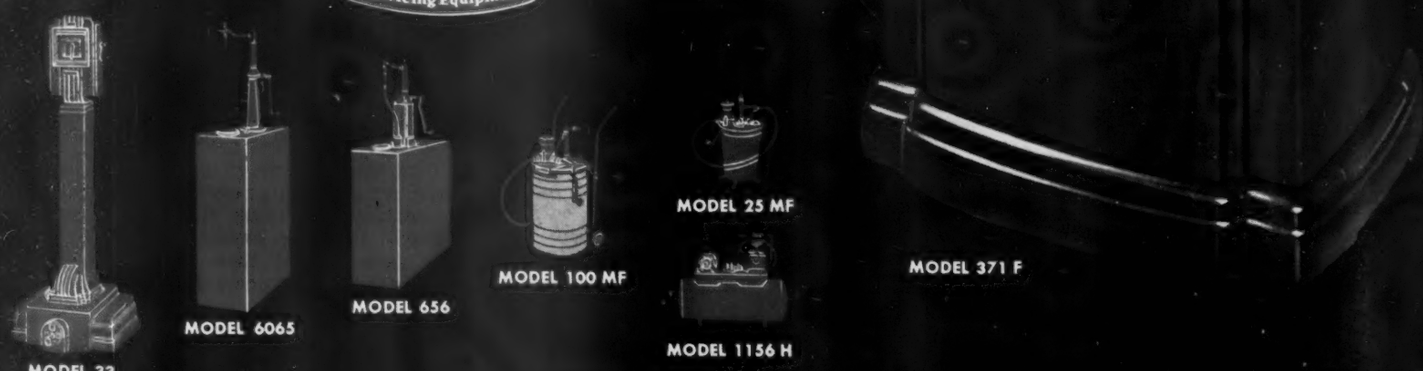


COMPLETE LINE OF SERVICE STATION EQUIPMENT

requisite being that the information required "is easily obtainable for inspection purposes."

There were several other rulings directly affecting certain phases of the oil industry, among them the declaration that pipeline, railroad, bridge and other repairmen, working on "essential instrumentalities of interstate or foreign commerce" are engaged in interstate commerce and subject to the act.

Similarly, it was held that employes driving trucks for manufacturers who operate their own fleets (private carriers again), that "such employes are clearly subject to the wage provisions of this act if the goods carried in the trucks ultimately leave the state of manufacture." (This ruling was issued before the Wage-Hour Division assumed jurisdiction also over these private truck drivers' hours.)

In two different rulings, the Division has held employes of co-operatives subject to the provisions of the act. In the first (N. P. N., Jan. 18, p. 32), Andrews ruled that employes of co-operatives, even those owning stock in the enterprise (and thus in the dual role of employer and employe) are definitely not exempted under terms of the law, as they might be in some other statutes having to do with the employer-employe relationship.

Later, the question of whether employes of farmer co-ops (most of which sell petroleum products) were engaged in agriculture, and thus exempt from the act, was propounded for answer (N. P. N., April 5, p. 6). The Division held that the work of the co-ops was not agricultural, or "work performed by a farmer", but was "work performed *for* farmers."

A month prior to effective date of the wage-hour law last fall, and before any interpretations had been issued, NATIONAL PETROLEUM NEWS attempted to forecast how the Wage-Hour Administrator would apply the new law to the oil industry (See N. P. N., Sept. 28, 1938, Pages 35-40). Today, after six months operation of the wage-hour law, N. P. N.'s "forecast" holds generally true, so far as the administrator has interpreted the law.

That "forecast" by N. P. N. as to how the wage-hour law would be applied to oil, was summarized, at the time it was printed, as follows:

"PRODUCTION: All operations where crude produced moves into interstate commerce.

"TRANSPORTATION: Intrastate pipelines and gathering lines; interstate pipelines as regards wages only.

"REFINING: All operations where products move in interstate commerce.

"MARKETING: Terminals and bulk plants receiving shipments from out of the state and trucks hauling intrastate out of these plants.

"Specifically, the law exempts pipelines and all interstate trucks—common, contract and private carriers, which may be subjected to hours-of-service regulation by the Interstate Commerce Commission under the Motor Carrier Act, from the maximum hours provision.

"Service stations probably come under the specific exemption for 'local retailing'.

"All employes who work in an executive, administrative, professional or outside salesman capacity, as will be defined by the wage-hour administration."

* * *

Oil Industry has Good Record Under Federal Wage-Hour Law

WASHINGTON — A survey of the federal wage-hour law's first six months of operation reveals that of the 10,000 complaints received by the Labor Department only about 15 involved any branch of the oil industry.

Of the oil industry complaints, only about five or six allege what might be actual violations of the law. The others, like a great many of the 10,000 complaints from all industries, are isolated cases of disgruntled employes whose accusations—even if found to be true—involve no infraction of the wage-hour statute.

None of the oil industry complaints have made allegations which the Wage-Hour Division of the Labor Department regards as worth investigating by its examiners.

Wage-Hour officials point out that they are primarily interested in complaints which appear to involve flagrant violation of the Act, affecting large numbers of workers. When these are cleared up—if ever, the Division may put its investigators (it has a staff of 125 to cover the entire country) to work on complaints involving a smaller number of workers.

Of the oil complaints, it is understood that several came from the same city (which was not revealed), and that all the complaints involve the refining branch of the industry. Whether they complain about wage or hour conditions could not be learned. But it is believed that some, at least, cover allegations of failure to pay overtime as provided in regulations issued by the Wage-Hour Division.

Although the wage-hour law has been operating for more than six months, less than 20 cases involving charges of violation have been taken into court. But there have been many more cases where the employer stopped the "violation" after being "warned", officials say.

Nine Rules on Protecting Fuel Oil Hose in Storage

With the season for domestic deliveries of heating oil drawing to a close, the problem of what to do with delivery equipment comes to the front.

Nine suggestions for the care of light heating oil hose before storing it away, to increase its longevity, have been drawn up by Michael Berman, technical superintendent of Hewitt Rubber Co., Buffalo. His suggestions are:

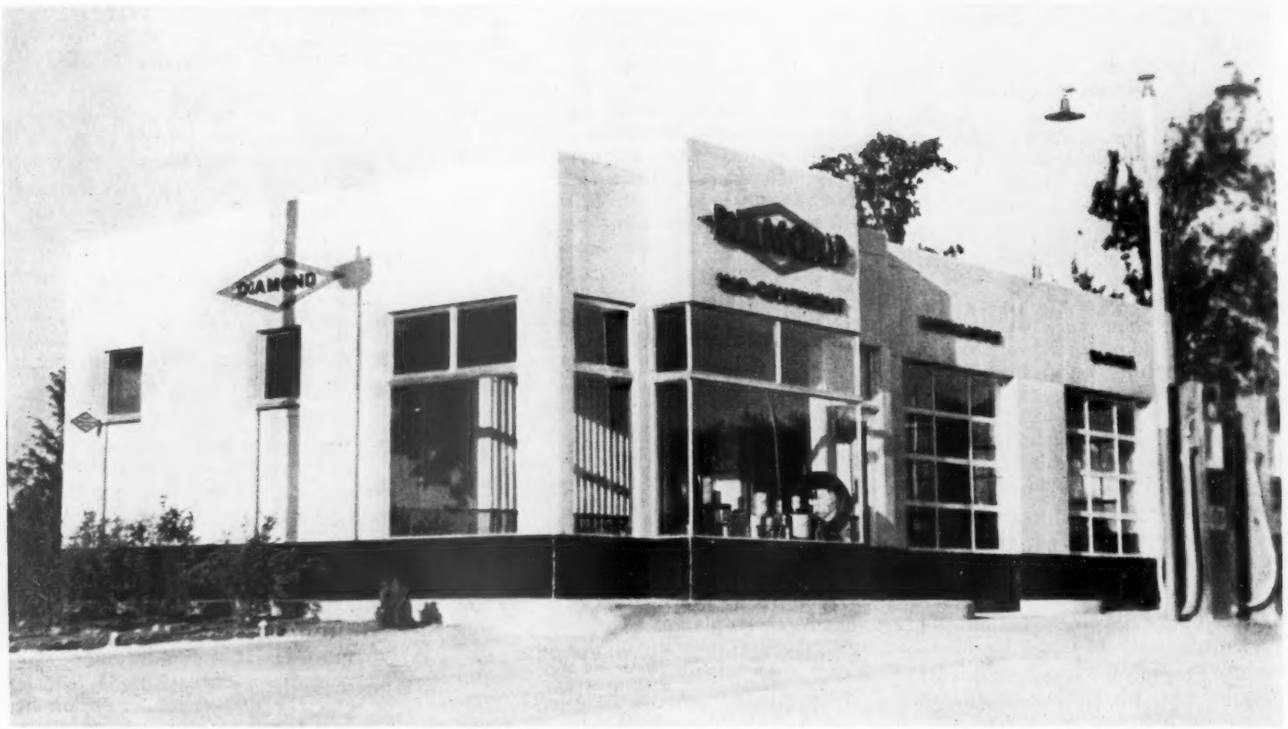
1. Remove hose from hose reel.
2. Thoroughly drain hose by gravity.
3. Run hot water through hose for not over three minutes. This softens, and tends to liquefy any caked oil accumulation.
4. Flush out hose with a non-inflammable petroleum solvent of high boiling range like the solvent naphthas. Gasoline is not recommended because of two hazards — possibility of lead poisoning if gasoline is leaded, and the danger of explosion or fire from igniting vapors. Benzol is not recommended from a health standpoint, and because of fire hazard.
5. Run hot water through hose again for one or two minutes to remove all solvent and vapors.
6. Thoroughly drain hose by gravity.
7. Clean exterior of hose with hot water and soap. Rinse exterior thoroughly with clean hot water.
8. Store hose in a dark, dry place.
9. Lay hose flat on floor in longest possible straight line by snaking back and forth. It is inadvisable to store hose on reel as it is under tension at all times. Rubber deteriorates far more slowly when stored free from tension and strain.

Milwaukee Jobber Moves Offices

Milwaukee Badger Oil Co. is moving its offices from the downtown service station at 228 E. Buffalo St., Milwaukee, to its new bulk plant at 955 W. Lincoln Ave., E. R. Wallman, secretary-treasurer announces.

More than 48,000 communities in the United States are dependent solely upon motor vehicles for transportation. These rail-less communities are widely distributed.

In New York state, 2482, or nearly half of the 5107 cities, towns and villages, are served by highways. Other examples include: North Carolina, with 1329 out of 3285; Missouri, with 2102 out of 4246, and California, with 2240 out of 5482.



Display Windows Dominate Station

THIS all-steel, porcelain enamel service station in Tulsa is typical of the modern design used by Mid-Continent Petroleum Corp. in its new stations. Its high windows, built to the same height in the sales room as in the lubritorium, provide excellent light and extensive display space, besides adding to the decorative effect.

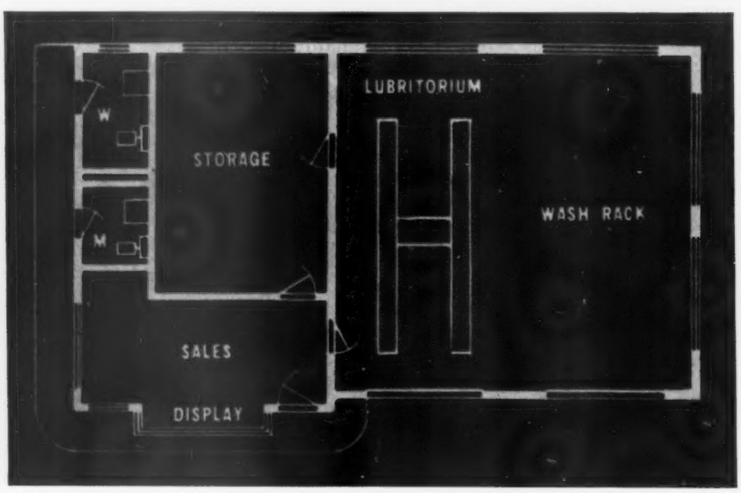
Doors are set apart by the fact that they are solid, except that a small window is built over them to match the height of other windows.

Generous use of black at the base produces a striking contrast to the over-all cream used in the main body of the building. The company's Diamond trademark and all other lettering are in red and black.

The station houses a lubritorium with automatic lift and latest in greasing equipment, a car washing room, store rooms, office, and ladies and men's rest rooms. Both of the latter have outside entrances. The building is said to be 95 per cent salvagable, and its cost no more than that of a structure of standard construction materials occupying the same space. Maintenance expense is at a minimum, and color permanent.

In addition, the structure, the company says, is lightning-proof, safe from fire and insulated against cold equivalent to a 14-inch brick wall. Porcelain is fused glass on steel base. The porcelain enamel exterior lends itself particularly well to illumination and color contrast. Shrubbery adds to the general attractiveness.

Building was constructed in three weeks. Total weight was over 28,000 pounds, with dimensions of 26 by 46 feet, with height of 14 feet.



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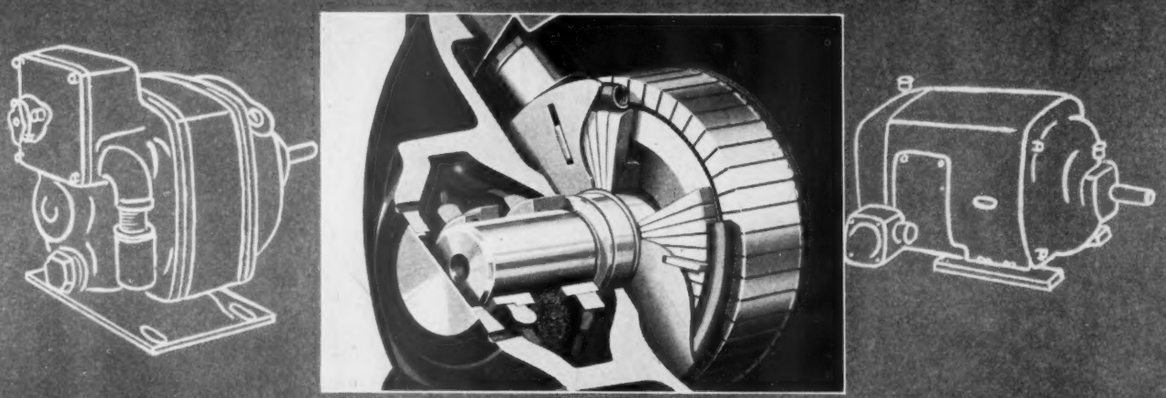

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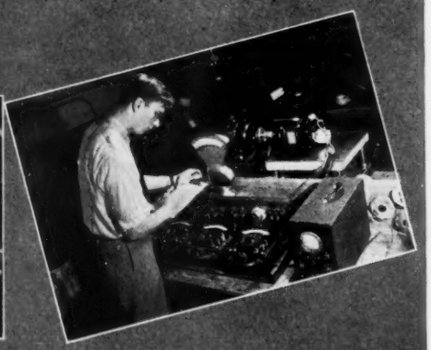

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OUTSELLING ALL OTHERS COMBINED FOR EIGHTEEN STRAIGHT YEARS

Lubricating the New Studebaker 'Champion'

LUBRICATION of the new "Champion"—the new six-cylinder car that marks Studebaker's bid for a share of the low-priced passenger car market—differs in only a few respects from that of Studebaker's "President" and "Commander" models.

The new, low-priced Studebaker also has a hypoid rear axle with oil filter, and overdrive optional at slightly higher prices. It has an L-head engine, with a three-inch cylinder bore and stroke of 3⅞ inches, piston displacement of 164.3 inches and horsepower rating of 21.6. The new model has been on the roads now for about six weeks.

The only additional point of lubrication on the "Champion", as compared with the other Studebaker models, is the transmission remote control box on the steering post. This requires the addition of chassis lubricant through a pressure type fitting at 10,000-mile intervals.

The new car has rubber shackles on the rear springs, cutting out six points of lubrication which are found on other Studebaker models, which have the threaded type rear shackles.

A self-adjusting packing gland on the water pump of the "Champion" does not require lubrication. Metal spring covers are used on the "President" and "Commander," but only the deluxe "Champion" comes with this equipment. The Fram oil filter, which is standard equipment on the larger models is available as an accessory for the "Champion."

Following the suggestion it makes for its larger cars, Studebaker recommends crankcase oil changes four times a year under average driving conditions. Seasonal changes can ordinarily be made at the draining period.

The crankcase capacity of the "Champion" is five quarts, while the "President" and the "Commander" hold eight and six quarts respectively.

Factory recommendations for the grades of oil to be used in the small model are the same as in the other two.

The manual suggests the use of the grade which will assure easy starting at the lowest expected temperature and urges the avoidance of castor oil or other organic oils. Studebaker says that use of run-in oils, recommended by some car manufacturers during "breaking-in period," are not needed in its models.

In Summer, when the average daytime temperature is 90 degrees Fahr. or above, the use of S.A.E. 30 motor oil is recommended.

In Spring and Fall when the temperature is 32 degrees Fahr. or over, the use of S.A.E. 30 is suggested, dropping to a S.A.E. 20 when the lowest temperature anticipated is plus 10 degrees Fahr.

In winter, when the anticipated temperature is lower than 10 degrees Fahr., S.A.E. 10 is recommended.

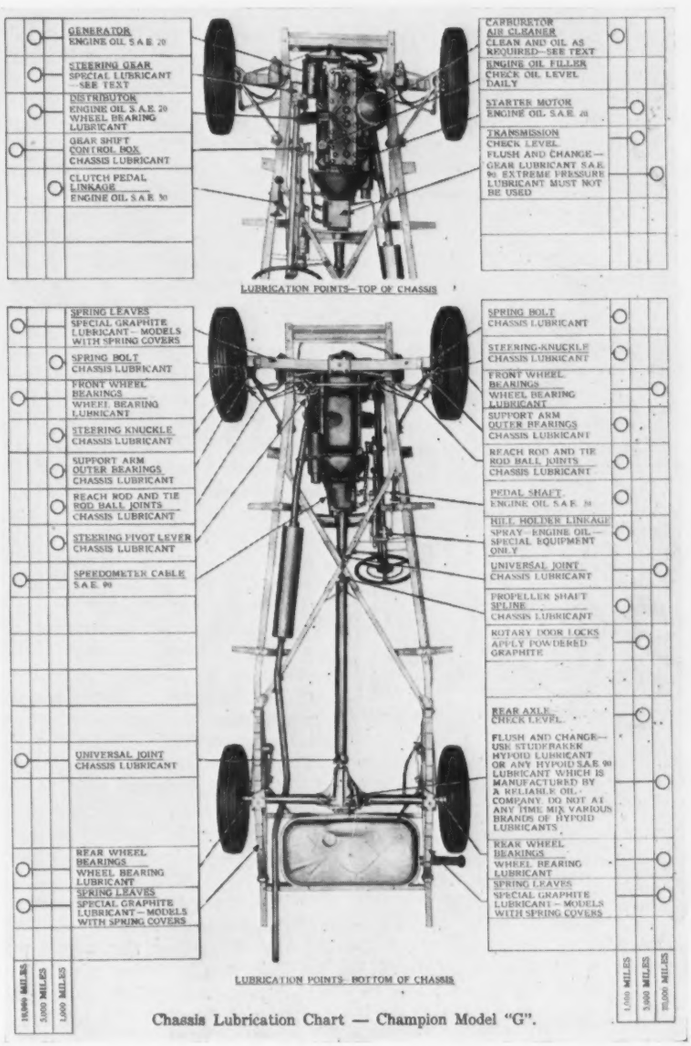
The conventional transmission of the "Champion" has a one-pint capacity. S.A.E. 90 gear lubricant is recommended, with a check every 5000 miles and lubricant replaced at 10,000-mile intervals.

The transmission with the overdrive has a total capacity of two-and-one-half pints; lubricant recommended is S.A.E. 90. The front and rear cases must be filled separately. The front case requires one pint and the rear case one-and-one-half pints of lubricant.

Studebaker warns against the use of extreme pressure lubricants containing lead, sulphur or chlorine compounds. When S.A.E. 90 is not available an S.A.E. 70 engine oil may be used in winter and a 50 grade in summer, in the overdrive. The change period is the same as for the conventional transmission.

The rear axle requires two-and-one-half pints of hypoid lubricant of S.A.E. 90 viscosity. It is suggested that the differential be checked each 5000 miles and the lubricant replaced after each 10,000 miles.

The universal joints should be repacked with pressure gun lubricant


GENERATOR ENGINE OIL S.A.E. 20
STEERING GEAR SPECIAL LUBRICANT —SEE TEXT
DISTRIBUTOR ENGINE OIL S.A.E. 20 WHEEL BEARING LUBRICANT
GEAR SHIFT CONTROL BOX CHASSIS LUBRICANT
CLUTCH PEDAL LINKAGE ENGINE OIL S.A.E. 30
CARBURETOR AIR CLEANER CLEAN AND OIL AS REQUIRED—SEE TEXT
ENGINE OIL FILLER CHECK OIL LEVEL DAILY
STARTER MOTOR ENGINE OIL S.A.E. 10
TRANSMISSION CHECK LEVEL FLUSH AND CHANGE— GEAR LUBRICANT S.A.E. 90 EXTREME PRESSURE LUBRICANT MUST NOT BE USED
LUBRICATION POINTS—TOP OF CHASSIS
SPRING LEAVES SPECIAL GRAPHITE LUBRICANT—MODELS WITH SPRING COVERS
SPRING BOLT CHASSIS LUBRICANT
FRONT WHEEL BEARINGS WHEEL BEARING LUBRICANT
STEERING KNUCKLE CHASSIS LUBRICANT
SUPPORT ARM OUTER BEARINGS CHASSIS LUBRICANT
REACH ROD AND TIE ROD BALL JOINTS CHASSIS LUBRICANT
STEERING PIVOT LEVER CHASSIS LUBRICANT
SPEEDOMETER CABLE S.A.E. 90
UNIVERSAL JOINT CHASSIS LUBRICANT
REAR WHEEL BEARINGS WHEEL BEARING LUBRICANT
SPRING LEAVES SPECIAL GRAPHITE LUBRICANT—MODELS WITH SPRING COVERS
SPRING BOLT CHASSIS LUBRICANT
STEERING-KNUCKLE CHASSIS LUBRICANT
FRONT WHEEL BEARINGS WHEEL BEARING LUBRICANT
SUPPORT ARM OUTER BEARINGS CHASSIS LUBRICANT
REACH ROD AND TIE ROD BALL JOINTS CHASSIS LUBRICANT
PEDAL SHAFT ENGINE OIL S.A.E. 30
RIFLE HOLDER LINKAGE SPRAY—ENGINE OIL—SPECIAL EQUIPMENT ONLY
UNIVERSAL JOINT CHASSIS LUBRICANT
PROPELLER SHAFT SPLINE CHASSIS LUBRICANT
ROTARY DOOR LOCKS APPLY POWDERED GRAPHITE
REAR AXLE CHECK LEVEL
FLUSH AND CHANGE—USE STUDEBAKER HYPOID LUBRICANT OR ANY HYPOID S.A.E. 90 LUBRICANT WHICH IS MANUFACTURED BY A RELIABLE OIL COMPANY. DO NOT AT ANY TIME MIX VARIOUS BRANDS OF HYPOID LUBRICANTS
REAR WHEEL BEARINGS WHEEL BEARING LUBRICANT
SPRING LEAVES SPECIAL GRAPHITE LUBRICANT—MODELS WITH SPRING COVERS
LUBRICATION POINTS—BOTTOM OF CHASSIS
15,000 MILES
5,000 MILES
1,000 MILES

Chassis Lubrication Chart — Champion Model "G".

at 10,000-mile intervals, while the sliding joint should be serviced with chassis lubricant at each 1000 miles.

The steering gear requires attention at 5000-mile intervals. The steering knuckles, the outer bushings on the knuckle support arm, the steering pivot arm and the reach rod ball joints should be lubricated with the pressure gun every 1000 miles.

For wheel bearings, the recommendation is that they be lubricated every 10,000 miles, with a wheel-bearing lubricant. S.A.E. 20 engine oil is recommended for the generator and starter every 5000 miles, with the distributor lubricated with the same oil and with the pressure gun at the same times.

No lubrication is required on the clutch release bearing, but the clutch and brake pedal linkage should be oiled with S.A.E. 30 oil each 1000 miles. Speedometer cable should have S.A.E. 90 lubricant every 10,000 miles.

While no lubricant is required on the rear spring shackles, the front spring bolts should receive attention each 1000 miles, using pressure gun lubricant.

The cooling system of the Studebaker "Champion" has a 10½-quart capacity. The gasoline tank holds 15 gallons. All tires require 26 pounds pressure.

Clean Rest Room Sign

Three thousand new highway approach signs advertising clean rest room service will be installed by Standard of Indiana in connection with its spring and summer advertising campaign. Clean rest room advertising will assert "We provide those clean rest rooms you've read about.."

The company's gasoline advertising, Wesley I. Nunn, advertising manager,

announced, will feature "Golden Jubilee Red Crown—Celebrating Standard Oil's 50th Birthday." For the fourth year the company will increase its newspaper advertising, using 1789 daily and weekly papers, with combined circulation of 13,687,486 in 13 mid-western states.

Plans are for installation of curb signs advertising gasoline, clean rest room service and motor oil and a nine-foot cutout for gasoline at 23,000 dealer stations.

Individualized Credit Cards Cut Down 'Dead Beat' Losses

A large, independent oil marketing company in California has found that individualized credit cards—good only at one station—provide quick action against 'dead beats'. In this way, the company also solved the problem of its dealers who hesitate to have blanket credit cards issued to their regular customers, for fear that they would have to share such customers with the supplier's other outlets.

LOS ANGELES

HOW can the independent marketing company solve the problem of credit accommodation to its customers without risking what may be a considerable loss when the holder of an ordinary credit card "goes bad"?

Mohawk Petroleum Corp., one of the larger independent oil companies in California, believes it has hit upon a solution in the use of a "Personalized Credit Card System", which has been found to surmount principal objections of the usual credit system and has met with enthusiastic dealer approval.

In commenting on this development, Emil A. Adams, credit manager in Mohawk's San Francisco division, pointed out that oil company credit men generally believe that the greatest hazard of their credit system is in granting a "non-cancellable blank check"—a credit card, which is honored in thousands of service stations.

Mohawk's individualized credit card is issued with the provision that it will be honored only in the service station or garage for which the account was opened. The customer's name, address, and account number is inscribed on the face, and the dealer's name and address on the back of the card. Adams says it is possible in this manner for the company to take a more liberal attitude in granting credit, because delinquent accounts can be shut off by notifying the respective dealers.

Not the least important advantage of the system, he adds, is that the company can issue credit cards "good until revoked", since revoking any card means simply notifying one retail outlet. This eliminates the expensive procedure of periodic renewals.

Many dealers are said to carry their own accounts receivable—thus tying up their ready cash—because they believe that to interest their regular customers in the usual oil company credit card convenience would mean to share these customers with every dealer handling the same products.

This angle is eliminated with the Mohawk credit plan, so that the dealer does not hesitate to let the company handle all of his accounts. Adams says most gasoline service stations find that the desirable business is their steady trade; that the occasional out-of-town or out-of-state customer is a one-time buyer; that only the highway service station gets more than a small percentage of this tourist business, so that the average dealer has more to gain than to lose by the personalized credit system.

"An energetic dealer who goes out to get business is usually the most desirable dealer from the company's viewpoint, and this type of dealer, especially, has reason to prefer the personal credit plan. If he solicits credit accounts, he does not want to do all his work for the good of all the company's dealers. He appreciates a system that enables him to hold all of his business for himself", this credit manager believes.

Since an independent oil company is not represented everywhere, statewide or national credit cards are of less value to them than to the major oil companies, and the personalized plan seems exactly adapted to their needs, Adams said.

Mohawk has not yet put the system into complete use. It was devised by the San Francisco department and is now in use only in that vicinity. However, it is indicated that, because of its enthusiastic reception, it will be extended elsewhere in the near future.

"15 Year Club" Formed

The National Oil Products Co., of Harrison, N. J., has formed a 15 Year Club, open to all classes of employes who have fifteen years continuous service with the company, according to an announcement made simultaneously to employes in plants of the company at Harrison, Chicago, San Francisco, and Cedartown, Ga.

"The purpose of the club," C. P. Gulick, NOPCO board chairman said, "is to promote a greater spirit of friendship and co-operation among employes of the company."

Members of the club will receive, in addition to gold medals, one extra week's vacation with pay annually, the announcement said.

TELL YOUR CUSTOMERS ABOUT THE ADVANTAGES OF *Emblem Protection*

"IT'S EASIER TO SELL PENNSYLVANIA"

This is one of a series of advertisements published in the interests of jobbers and dealers. Each of these advertisements will develop one of the many sales arguments for Pennsylvania Motor Oils. *Important:* These arguments are *tested*. They are sound sales points for your selling.

...it helps to Clinch Sales

When you talk to a customer about emblem Pennsylvania Motor Oils you can tell him right from the shoulder —

"*Mister, this is 100% Pure Pennsylvania. And the emblem guarantees it!*"

Motor oil produced and sold under the emblem is not only certified under *bond* to be made exclusively from Pennsylvania Grade Crude Oil, but also is backed by *written* guarantees from refiners and marketers.

Tell these facts to your customers. In these days of keener and keener competition, *emblem protection* is a winning sales point that continues to gain business for Pennsylvania jobbers and dealers. If you're interested in more information on why emblem Pennsylvania Oils help you *trade up* instead of down, talk to a fieldman or write headquarters . . . today!

82% SAY "PENNSYLVANIA!"

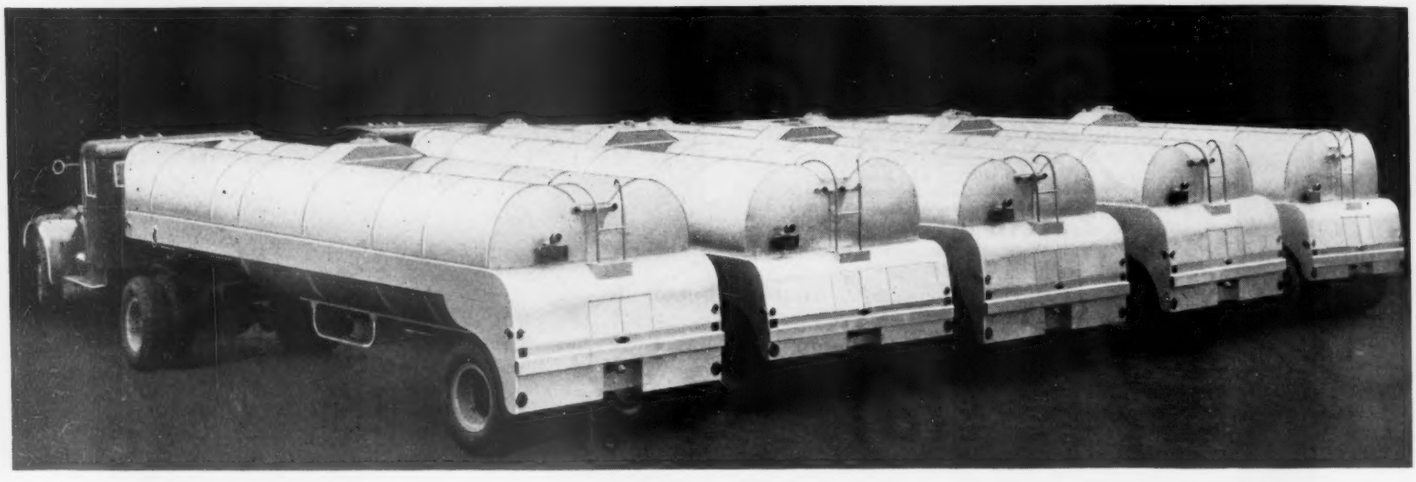
The question, "Which type of motor oil is best?", was put to motorists in an unbiased nation-wide poll by an independent research organization. 82% answered, "Pennsylvania."

PENNSYLVANIA GRADE CRUDE OIL ASSOCIATION
OIL CITY, PENNSYLVANIA

BETTER OILS FROM THE GROUND UP!

BUTLER MAKES "TWINS" In Gasoline Transports With

See Why Haulers Ask About "TWINS" All Across America!



Southern Oil Transporters, Inc., Increase Fleet With 'TWINS'—Five Sets At A Time—To Keep Payloads At Peak—To Get Greater Safety Through 2 to 20 Times Greater Strength. . . .

As big Atlantic coast operators, noted for their superior equipment, Southern knew it was worth real money to them, and here's why: The two shapes of Butler's Twin-Tanks give them 20 TIMES MORE STRENGTH than is needed to carry the combined weight of tank and full load! And that's just one point!

The short top and bottom radii of TWO tanks, instead of a long radius in a single shape, cut down liquid load surge and vibration! TWO bottoms, instead of one, distribute liquid load over a greater load-bearing area—actually increase "hopper strength" 3¼ times over the single flat oval design of other makes! The sketch at far right shows how Twin-Tanks multiply critical bottom strength by eight!

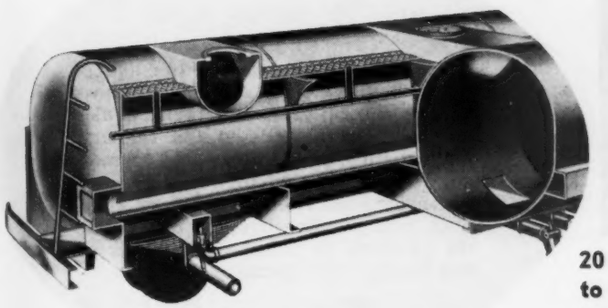
In addition, Twin-Tank's depressed walk-way quickly drains spillage, cutting down fire hazard more than ever before!

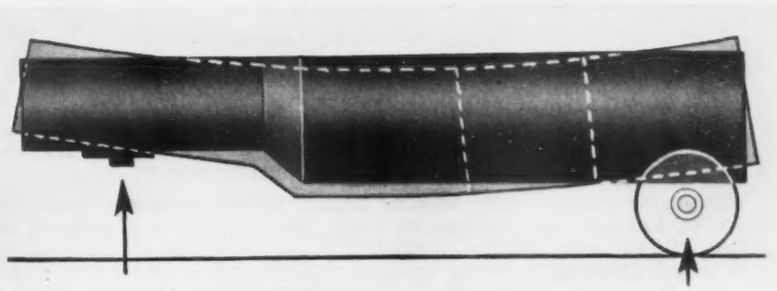
Send for complete details now! . . . See for yourself how easily you, too, can save money with Butler Twin-Tank Safety Transports.

Twin-Tank Makes Hargleroad Transport A Stronger Butler Booster Than Ever! Well-known throughout Nebraska as owners of the finest equipment available, Hargleroad Transport Co., of Hastings, has bought Butler Trailow-Tanks for years because of their low gravity, greater safety, and increased carrying capacities. Knowing well how these Butler features have helped cut transport costs, Hargleroad was quick to recognize the additional merits of this revolutionary Butler Twin-Tank design. Today they're a bigger Butler booster than ever.

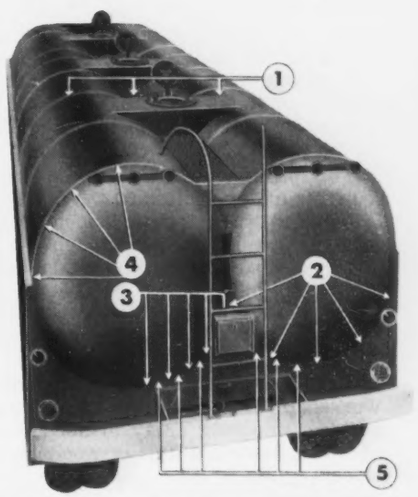
BUTLER
Twin-Tank
SAFETY TRANSPORTS

MEAN GREATER SAFETY
2 to 20 Times More Strength!





20 Times the Strength Needed to Carry Weight of Tank and Load! . . . That's the 20-to-1 safety factor the entire industry has been talking about since Butler announced the new Twin-Tank Safety Transport. The TWO horizontal tanks, instead of one, increases beam strength twenty times greater than needed to carry tank and load.



Safety For Men and Finish! This new safety feature is possible only because of Butler's Twin-Tank design—a diamond-treaded walkway between the tanks that offers a firm, safer footing for driver. Sloping aft, the complete length of the tanks, this treadway drains off any spillage—protects the tank finish and cuts down fire hazard!

Twin-Tank Construction Principle is a marvel of skilled engineering simplicity. It's easy to see that TWO parallel tanks, of smaller radii, will have greater strength than only ONE tank with larger radius. Hopper strength is increased 3¼-to-1 . . . . critical bottom strength boosted 8-to-1! In addition, load capacity of each Butler tank is increased ½ gallon per inch of length, compared to oval of same height and width.

See For Yourself What's Causing This Swing!

It's not whims or fancies that are switching haulers from coast to coast to Twin-Tanks—it's hard, down-to-earth, money-saving advantages that this revolutionary Butler design gives them!

You, too, can meet tightening regulations with Butler's 20-to-1 safety factor . . . cut down deadload, boost payload . . . reduce fire hazard . . . and safeguard your rolling-stock investment against premature obsolescence due to future legal restrictions! Get detailed facts now about the extra features that only Butler Twin-Tanks can give you. Mail the coupon today!

SECRET OF **VS**

This simple sketch shows why Twin-Tanks have greater critical bottom strength—actually 8 times greater! Arrows indicate the direction of load stress. Extra strength is vital here, at the most common section of failure in conventional construction.

"Next Time Have Twins!"

FREE! Mail this coupon today for Free folder and other literature giving complete, inside facts on Butler's amazing Twin-Tank Transport. Careful study of this material can help you save hundreds to thousands of dollars in transporting gasoline.

BUTLER MANUFACTURING COMPANY
Kansas City, Mo. . . Minneapolis, Minn.

Butler Manufacturing Company
1241 Eastern Ave. Kansas City, Mo.
941 Sixth Ave. S. E. Minneapolis, Minn.

Please send Free literature on the weight-saving, larger payload, and greater safety of Butler Twin-Tank Safety Transport of.....gal. capacity.

Name .....
Address .....
City..... State.....

'Nort' Weber Carves a Niche In Oil Industry's History

Norton H. Weber, who has just completed his 40th year in the oil business, keeps young with his wood-carving hobby

CHICAGO

IF the doctors are right in saying that no man is really happy or safe without a hobby, then Norton H. Weber, Chicago, vice-president of The Pure Oil Co., who has just completed 40 years' active service with the company, has treble protection—he has three hobbies.

By his own admission, Mr. Weber is an ardent fisherman. According to his friends, he is also an expert huntsman, but topping both, at least in point of permanent evidence of ability, is his skill in wood-carving.

This pastime of wood-working started from a leaning toward the mechanical and a desire for an indoor hobby, Weber explains. It has developed into a pleasure and relaxation outlet and, naturally, he adds, a great deal of personal satisfaction derives from creating things with your own hands.

This intricate art of carving things out of wood is carried on in his home workshop. The shop is fully equipped with an imposing array of such tools of a wood-carver's art as wood saws, chisels, gouges, files, planes, routers, awls, punches, scribers, jigsaw, lathe, spirit level, a miter box for precision cutting, a vise for clamping wood, and other similar equipment; and bottles of stains, fillers, lacquers and other finishes.

Mr. Weber's work in wood-carving, according to M. B. Chittick, writing in the April issue of "The Pure Oil News", is characterized by its individualism, its finished detail, and the variety of woods used. Friends, knowing his interest in unusual woods, send him varieties from all over the world.

From this completely outfitted shop have emerged such complicated pieces of handicraft as a full-sized and attractive coffee table, composed of more than 5000 separate pieces of special woods from all parts of the United States, which were fitted into a pattern resembling mosaic.

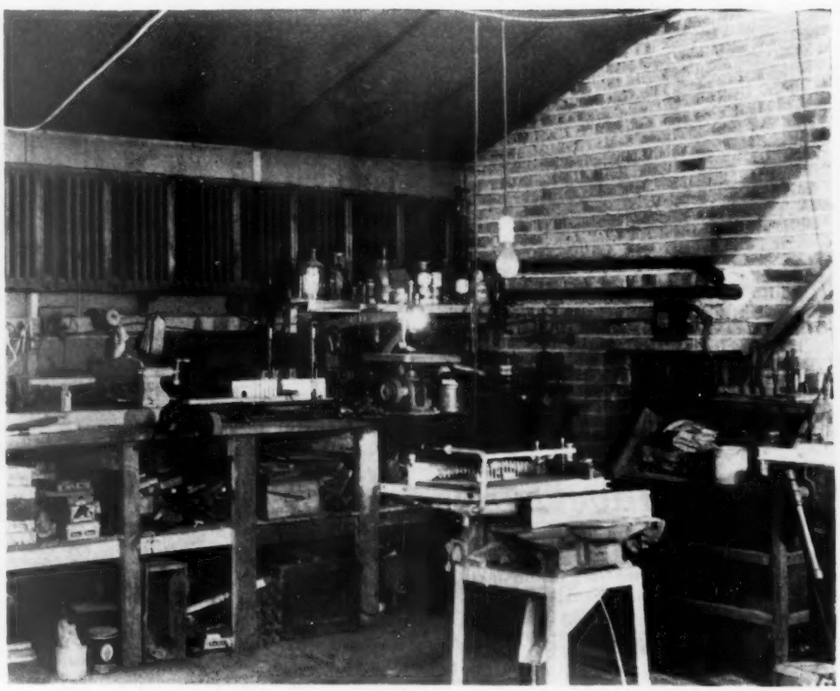
Other interesting pieces he has made are occasional tables, an early American walnut table, table lamps, ash tray, foot stool, magazine rack, and a small spinning wheel.

Pursuit of these three time-absorbing hobbies in a busy oil executive's life indicates not only a systematic planning of time, but a definite interest and pleasure in horizons beyond the boundaries of business routine. That Weber's life has been a busy one can be guessed from the fact that he joined the oil industry in its formative period over a half century ago.

A team of horses got Weber started in the oil business. Born in the center of western Pennsylvania oil activity at Dempseytown, Venango county, Oct. 6, 1871, he began at the age of 15, to haul water to oil wells for producing operations. He then hauled crude oil from wells to the refinery, and, in turn, refined products to market which consisted then of the country merchant. No cross-country pipelines nor gasoline-driven trucks were yet available to transport products of this rising giant industry.

At 17, Weber heeded the call of Horace Greeley to go West and spent two years pioneering in the then primitive areas of Colorado and Oregon.

The death of a brother brought him back to Pennsylvania. He joined the



Here is a corner of the well-equipped tool shop in Mr. Weber's home where he carves many interesting articles from wood

We put the World's Fair to work for you!

Cities Service dealers are cashing in on the Biggest Travel event of the year with this **"KEYS TO PROFITS"** *program!*

The famous Cities Service Radio Program will carry the news of all these items to millions of car owners in their homes. On the highway, at the stations, Posters, Billboards, Painted Bulletins will carry compelling sales messages from month to month. And to top it all Cities Service Oil Company shares in the Petroleum Industry Exhibit at the World's Fair!

The Cities Service Oil Company Franchise includes a complete program of World's Fair features designed to attract more millions of motorists to Cities Service Stations. New, larger and improved road maps in four colors, a special World's Fair Map, the services of the Touring Bureau—these are all practical helps to sell Cities Service products. "The Spirit of New York" is a new, original give-away that every world's Fair visitor wants. It contains 5 beautiful paintings of New York, suitable for framing, and includes valuable New York World's Fair 1939 Information.

Consider the completeness of the Cities Service Franchise as the basis for your business — now! Famous products, timely, extra service features that prove "SERVICE IS OUR MIDDLE NAME"—the backing of the best established radio show in the industry . . . these are only a part of the "Keys to Profits" program. Find out all about these money-makers. Write today to the nearest office listed below!

FOR YOUR ENJOYMENT ● **NEW THRILLING RADIO DRAMA** every Friday evening at 8 o'clock E.D.T. Hear an exciting chapter of the "Romance of Oil." This is a special feature of the Cities Service Hour. The program also stars Lucille Manners, Ross Graham, Frank Black and the Cities Service Singers and Orchestra.

CITIES SERVICE OILS AND GASOLENES

CITIES SERVICE OIL COMPANY; Chicago . . . New York . . . Cedar Rapids . . . Boston . . . St. Paul . . . Grand Forks . . . Kansas City . . . Fort Worth . . . Tulsa . . . Milwaukee . . . Cleveland . . . Detroit

CITIES SERVICE OIL COMPANY, LIMITED; Toronto, Ontario

ARKANSAS FUEL COMPANY; Shreveport . . . Little Rock . . . Jackson, Miss. . . . Birmingham . . . Atlanta . . . Charlotte, N. C. . . . Nashville . . . Richmond

A coffee table consisting of 5,000 separate pieces of wood made by Mr. Weber, the wood coming from all parts of the United States

Pennsylvania Railroad, starting work as a clerk in Titusville and working 10 hours a day at $40 per month. For more than a month and a half, he worked without pay—"to learn the freight business"—as they put it in those days.

After nine years with the Pennsy, he left to again enter the oil business. On March 1, 1899 he joined the Producers & Refiners Oil Co., Oil City.

THE oil business was never dull in those early days, Weber recalls—if, indeed, it is now. Pitched battles were fought in the open field between the existing railroads and encroaching pipelines, the rails seeking to prevent these future large-scale carriers of oil from getting a toehold, even as today the rails battle the truck and barge, but through the legislative halls of Washington and the state capitals.

In 1901 Weber was transferred to the Philadelphia offices of the Pure. In 1903, when governmental regulations required the divorcement of pipelines from producing and refining operations, he played a vital part in the organization of the pipeline subsidiary of the Producers company.

Then one day in 1912, without any preliminary warning and to his great surprise, Weber found himself president of the Pure of New Jersey and its affiliate, the United States Pipe Line Co. Weber says "he thinks" there was a stormy session of the board of directors, in which "vigorous men spoke strong words". Proof of such a session is etched in the old directors' table, still in possession of the company, which bears deep marks from the heavy cane of Michael Murphy, who resigned the presidency that day.

In 1917, Weber and Beman G. Dawes, then president of The Ohio Cities Gas Co. and now chairman of the board of the Pure Oil Co., negotiated the sale of the Pure of New Jersey to the Ohio Cities company. This was the major development in the early expansion of the present Pure Oil corporation, Chittick says. The Ohio Cities Gas Co. changed its name in 1920 to the present Pure Oil Co.

With this consolidation, Weber became a vice-president of the new Pure Oil Co. He has held this position ever since. A year ago he became a director.

The annual high spot of his fishing activity is the meeting of the Mud Bottom Club in Canadian fishing waters. This group is comprised of several of his early associates in the oil industry. His hunting interests center in the Davy Crockett club, which also meets annually.

Mr. Weber has been an officer of the Pennsylvania Grade Crude Oil Assn. and is now first vice-president of the National Petroleum Assn.

He is married and has three daughters, the Misses Jean, Esther and Norma.

Proof enough that 'Nort' Weber is a fisherman is the fact that he belongs to The Mudbottom Club. Pictured here is a fishing party at the camp of Charles L. Suhr, Lake Kaminiskeag, near Barry's Bay, Ontario, Canada. Weber is in the first row on the right. On his left is T. P. Thompson, Jr. The fishing party also included Robert S. King, Fayette B. Dow, E. C. Breene, Harry Logan, Sam Messer and Clarence Davison. Picture was taken by Warren C. Platt

NOT A LOOPHOLE In the Exide Proposition!

EACH part of the Exide program has been tested by dealers for its usefulness. Nothing has been included that does not add to the value of the Proposition; every-thing has been planned to make the selling of Exides easier and more profitable for you.

In other words, *every portion of the Exide Proposition functions co-operatively for* INCREASED BUSINESS!

In the comments of the Exide dealers shown on this page, you can discover how efficiently the Exide Proposition has worked for them. It can do as much for you! See your Exide Wholesaler today, or get in touch with us.

"A consistent increase in the number of Exide Batteries sold, and particularly of the better grades, during the last two years has convinced me that the Exide Automatic Vendor is an outstanding development in merchandising batteries."—Mr. Marvin E. Andrews, Andrews Battery Company, Roanoke, Va.

"I consider the Exide franchise the most valuable of all my factory contracts. I signed up as an Exide Dealer on March 14, 1930, at the beginning of the depression, but in spite of hard times I was able to sell Exide and maintain prices. Exides consistently give service for twice the length of their adjustment period, and I have had to make adjustments on only six out of approximately 4500 Exides sold by me during the last nine years."—Mr. Ralph A. Muller, Auto Electric Co., Nyack, N. Y.

"The fact that you are a battery dealer doesn't mean in these days that you are going to get the battery business. You've got to show the car-owner a good reason for spending his money, and we've found that the Exide Sure-Start Service plan removes the usual doubt from the customer's mind, and creates good will and confidence in your recommendations and service. With the help of your Exide Tester and Service Kit we have sold a lot more batteries in a lot less time than ever before."—Mr. Albert D. Poisson, Four Brothers Service Station, Manchester, N. H.

"In the fifteen years that we have been in the Service Station business, we have handled several different makes of batteries, but for the past five years we have pushed Exide and we are convinced that Exide has less sales resistance than any battery we have ever sold."—Mr. J. J. Daley Mgr., J. J. Daley, Inc., Jacksonville, Fla.

"We have always found Exide Batteries ahead of competition in value, dependability, and up-to-the-minute features. They are, undoubtedly, the world's finest batteries for both the dealer and the customer."—Mr. R. C. Miner, Miner Battery Company, Batavia, N. Y. (Editor's note—Mr. Miner has been selling Exides since May, 1918.)

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia

The World's Largest Manufacturers of Storage Batteries for Every Purpose

Exide Batteries of Canada, Limited, Toronto

Motor Vehicle Owners

Pay their Share of Road Costs

N. P. N. News Bureau

CHICAGO—Motor vehicle owners in Illinois paid a "fair share of annual highway costs in 1936 and in addition contributed substantial sums toward new construction, according to a report of an impartial committee of four college professors, who completed a study on the users' contribution to highways at the request of the Illinois Highway Users Conference.

The study followed the acceptance by the U. S. district court in southern Illinois of a cost study by V. L. Glover, state department of public works and buildings, as evidence that users were not paying their share of highway costs.

Glover's report concluded that "the annual cost chargeable to the highway users for maintaining the highways of the state of Illinois for the year 1936 was $116,220,020.43", said Chester G. Moore, director of the Illinois Highway Users Conference.

The committee, whose finding disagreed with the Glover report, consisted of Grover C. Dillman, president of Michigan College of Mining and Technology, former chief engineer and commissioner of Michigan State Highway Department. D. Phillip Locklin, associate professor of economics, University of Illinois, formerly transportation economist for the Interstate Commerce Commission. G. Lloyd Wilson, professor of transportation and public utilities, University of Pennsylvania, formerly consultant to Federal Coordinator of Transportation. John S. Worley, professor of transportation engineering, University of Michigan, and formerly with the ICC.

Motor vehicle owners paid $52,361,907 in taxes during 1936, the committee's report shows, meeting the amount of annual highway costs that should be allocated to them and leaving a surplus for new construction ranging between $6,430,000 and $22,330,000, depending on how highway costs are divided between motor vehicles and general taxation.

Motor carriers have charged that Illinois authorities, as defendants in a tax suit, had included improper charges in arriving at highway costs and had considered highways as "public utilities" on which the state should profit.

The report of the professors points out that there is an important difference between the characteristics of a "public utility" and a highway system, as highways are nonprofit enterprises. Capital for highways comes from taxes and it is not an investment, and that highways are not completely on a user basis since the community as well as the user benefits.

Moore, who made the special committee's report public said that in arriving at the figure of $116,220,020.43, Glover "found that the amount which in his opinion, should be chargeable to the users of the highways for maintenance, including policing and administration, was $24,671,503.50. It also included a figure of $9,311,309.89 as taxes on the unamortized cost of the highways; $29,796,191.66 as interest on investment in the highways, and $29,211,938.70 as the annual amortization charge." In addition, Moore said, "he included a figure of $23,229,076.68 as annual interest on the value of the right-of-way."

"Owing to the fallacious inclusion of some of the above items as annual highway costs, the study was made for the purpose of arriving at a sound and proper basis for the compilation of annual highway costs," Moore added.

The committee appointed by the highway users' conference held that total cost of highway systems, for motor vehicle taxation purposes, consisted of the following items:

"Interest on outstanding indebtedness; an annual charge sufficient to amortize outstanding indebtedness over the service life of the highways for which the outstanding indebtedness is incurred; administrative expense properly chargeable to the management and maintenance of the highways; an annual charge for maintenance and operation including repairs, renewals and replacements; and that portion of the state police cost properly chargeable to the patroling of highways."

The committee reported that it was not proper to include: "interest charges other than on actual highway indebtedness; assumed taxes on the right of way and highway as property; depreciation and obsolescence."

The allocation of costs to others than the highway users "is justified because of the community or social benefits conferred by the highways", the report adds.

Taking up the point about highways being considered "public utilities," the committee reported that highways were not built as a profit making enterprise. Capital invested in a privately owned utility is furnished by investors, while capital invested in highways is provided by the people themselves through taxation; and that highways are not completely on a user basis. In other words, the report states, the cost of providing the service is not expected to be borne entirely by charges levied upon motor vehicle owners, but in part by other beneficiaries of the highways.

Tanker Strike Enters Fifth Week

With Signs of Let-up in Offing

NEW YORK, May 16.—Strike of seamen on tankers of Standard of New Jersey, Socony-Vacuum, Tide Water and C. D. Mallory & Co. went into its fifth week, with little change in the general situation, according to reports here.

Discussions between representatives of the companies and of the National Maritime Union last week brought little tangible results, but reports are that the union is continuing negotiations with companies individually.

One of the principal points at issue in the strike was "preferential hiring." The union insisted that all seamen be hired through union halls. The companies take the position that this is tantamount to the closed shop, to which they will not agree.

Indications were that the union has relented somewhat on its demands for "preferential hiring halls" and are willing to compromise on this question, in view of the fact that the New Jersey company and Socony-Vacuum long ago had established their own hiring halls.

However, the question of immediate discharge of replacement crews which have been operating the vessels since the strike was called April 17 is a new stumbling block, which has arisen since the strike was first called. Reports are that the company will not agree to the union demand that these men be discharged immediately.

Some picketing of service stations of the three oil companies involved is being carried on in the metropolitan area of New York city. No violence, except for a brief flare-up between pickets and police at Everett, Mass., has been reported.

Twenty-four New Orleans stations and the Baton Rouge refinery of Standard of Louisiana, subsidiary of the New Jersey Standard, have been picketed since April 24. Company officials said that business had improved at some stations. The union is reported to be passing out pamphlets at colleges and high schools in New Orleans.

The U. S. Tire Supply Co. at New Orleans, distributor of Standard of Louisiana products, has applied for an injunction against picketing, saying that sales of gasoline and oil were only 16 per cent of its business.

$200,000,000

Not WPA CCC or AAA but RTM*

*REPLACEMENT TIRE MARKET FOR 1939!

The New Giant DeLuxe Seven rib design provides maximum safety and service. Runs quietly, stops quickly, wears down slowly and evenly, giving most non-skid mileage. Every Giant Tire is protected by a written bonded guarantee.

BIG sounding figures? Yes. Tire replacement is a mighty big business, composed of millions of buyers. The gasoline station is the place where these millions are spending more tire money. Every one of these prospects will drive into service stations, not only once but many times during the year. Station salesmen will put air inside the very tires to be replaced. It is a natural profit-increasing setup for the modern gasoline station.

Spurred by this profitable, ready-market, thousands of stations are now selling tires and tubes. Alert oil jobbers are reaching for and getting a good share of this business.

It is "quick-money" for oil jobbers—but . . . to get the highest sales volume, repeat business and top profits, THE JOBBER MUST HAVE THE RIGHT KIND OF GUARANTEED TIRES . . . competitive PRICES and ABSOLUTE TERRITORY CONTROL.

The Giant Jobbers' Plan Gives You Everything

Giant has a plan all ready for you—a plan designed especially for oil jobbers—the plan many oil jobbers have found best for making extra profits.

Under this plan you can offer tires and tubes for all makes of passenger cars, trucks and buses. You will have a schedule of jobber discounts enabling you to compete with chain store and mail order prices. The Giant Plan puts you in the tire business with a brand that is your own and gives you protected territory.

This plan will be explained to you in full detail . . . personally . . . without obligation on your part. As a starter—mail the coupon.

THE GIANT TIRE & RUBBER Co.
FINDLAY, OHIO

The Giant Tire & Rubber Co., Findlay, Ohio

Send us more information about your Giant Tire Sales Building Plan for oil jobbers.

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ASTM POUR POINT
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ASTM CONRADSON CARBON
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ASTM COLOR
3½ 4 5 6

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Manufactured Solely by

THE CONEWANGO REFINING CO.
Warren, Pennsylvania, U. S. A.

Dear Editor:

I wish to congratulate you upon your editorial dealing with break-down figures for profit and loss accounting in the oil industry and which appeared in the May 3rd issue of NATIONAL PETROLEUM NEWS. We believe that you have outlined a very sensible, sound and sane procedure for getting at this question and that if the suggestions which you have outlined are carried out, it would do more to stabilize and place the petroleum industry on a sound operating basis than other remedy which has so far been suggested. It is a pleasure to read so intelligent a comment on this question.

If more time and effort was spent by those of us interested in the petroleum industry in making use of and applying existing facilities for remedial action rather than pressing for new and untried remedies, much sounder progress would result.

We wish to express our appreciation to you for so clearly setting forth this whole matter on a very logical basis and which is readily understandable.

Yours very truly,
(Signed) **George C. Newton,**
LAKE STATES OIL COMPANY,
Iron Mountain, Mich.

* * *

Dear Editor:

I should like to congratulate you upon the editorial in the May 3rd issue of your magazine which strikes directly at one of the principal causes of the petroleum industry's difficulties. I believe with you that if the various divisions of the petroleum industry were made to stand on their own bottoms through a system of separate profit and loss accounts for each division, the first big step would be taken towards ultimate solution of many unsatisfactory trade practices.

I attach as of interest a page from our latest Industries Service which covers our viewpoint on current conditions in the industry.

Very truly yours,
(Signed) **Joseph Gordon**
Fenner & Beane
New York

New Tydol Campaign Announced

N. P. N. News Bureau

NEW YORK—Tide Water Associated Oil Co.'s summer advertising campaign will introduce and feature a new brand name for its regular gasoline, "Tydol Flying A". Plans were announced at a meeting of about 750 company salesmen, distributors and tank car buyers at the Hotel Plaza, here recently.

"My WITTE DIESELECTRIC PLANT pays me more than the interest from a $10,000 bond"

So says one station dealer. That's conservative, too, for WITTE Dieselectrics are saving many station operators twice as much as 4% interest on $10,000 gold bonds. In fact, so outstanding are the savings on these plants that produce electricity for less than 1c a K.W.H. from cheap, non-explosive fuel, that WITTE says to all station operators whose current costs run $50 a month or over.

Pay Out of Savings Plan

Install a WITTE Dieselectric and see if the savings, between your present cost and WITTE operation cost, won't make the monthly payments. For details, write giving your present average monthly current costs.

1500 to 8000 Watts

$825 and up f. o. b. K. C. Mo.

1500 to 8000 Watts Vertical and Horizontal Electric or Manual Starting

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NAME .....

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NEW EQUIPMENT And the Manufacturer

STEEL BUILDINGS — The Globe-Wernicke Co., Cincinnati, O. are now offering custom-built steel buildings, including service stations and refinery buildings, made from pre-fabricated standard units.

The buildings come with either a single or double face wall. The single wall is reversible and any type of conventional building material finishes can be applied outside or inside, the company states.

* * *

WHEEL-BEARING LUBRICATOR— A new-type wheel-bearing lubricator has just been perfected, according to an announcement by the Alemite Division of Stewart-Warner Corp., Cgo. It is reported adaptable to both ball and roller wheel-bearings on all modern makes of passenger cars and trucks.

As an accessory to the lubricator, Alemite also offers a new-type piston gun for pumping cleansing fluid through the wheel-bearings prior to lubrication.

* * *

NEW ADVERTISING MANAGER— W. D. Wise has been appointed advertising manager of the Fruehauf Trailer Co., according to announcement by L. C. Allman, vice-president and director of public relations. Wise also will supervise sales promotion activities. He joined Fruehauf in 1931 as a member of the sales department, transferring to advertising work in 1933.

* * *

TANK INSULATION—A method for insulating and fireproofing oil storage tanks has been developed by Munn & Steele, Inc., 130 Lister Ave., Newark, N. J. A solid 4-inch fill of expanded Vermiculite is used to encase the outer metal shell. The entire insulating shell is removable and reclaimable for tank inspection and repair.

* * *

HEADS LIGHTING DIVISION—W. F. White has been appointed manager of the Lighting Division of the Westinghouse Electric & Mfg. Co., at Cleveland, according to a company announcement. He succeeds F. R. Kohnstamm, who has been appointed sales manager of Westinghouse Merchandising Division, Mansfield, O. Mr. White has been with Westinghouse since 1921.

* * *

AUTOMOTIVE EQUIPMENT — Horns and lights have been added to its list of automotive products merchandised nationally, the B. F. Goodrich Co., Akron, announces.

PERSONNEL CHANGE — George Williams has been appointed assistant sales manager of the Chek-Chart Corp., with headquarters at Chicago, the company announces. Williams was connected with the retail branch of the oil industry from 1931 to 1937 on the east and west coasts. The past two years he has been connected with E. W. Allington, who represents Chek-Chart in the eastern territory.

* * *

METAL TUBING CATALOG — A new 24-page catalog covering the use of its line of seamless flexible metal tubing has just been printed by the American Metal Hose Branch of the American Brass Co., Waterbury, Conn.

The catalog contains pictures and charts and also complete engineering data and specifications with simple installation rules, the company states.

Lion Listed On 'Big Board'

NEW YORK — Lion Oil Refining Co.'s common stock and convertible debentures, due in 1952, have been listed on the New York Stock Exchange. Previous to the listing on the "big board" Lion's common stock had been listed only on the New York Curb and the Chicago Stock Markets. Listing has been discontinued on the Curb, but will remain on the Chicago market. The debentures are listed now only on the New York Stock Exchange.

More than 300 drivers of Atlantic Refining Co., who had an aggregate of over 4,000,000 "safe" miles, were recently presented with gold pins by the company.

NEW!

CURTIS FOUR POST ELECTRIC LIFT

NO OVERHEAD OBSTRUCTIONS — Drive on either end — no interference with open car doors.

SAFE — Each corner has safety dogs and safety switch. All four corners of platform stop should emergency occur at any corner.

NO EXCAVATION — No special foundation, no floor sockets.

MAXIMUM ACCESSIBILITY — Clear working space under car.

EASY TO INSTALL ANYWHERE — Move it when and where you like.

Exceptionally rugged construction — Extremely simple mechanism. Free-wheel and Roll-on types.

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Gentlemen: Please send me complete data including prices on the NEW CURTIS FOUR POST ELECTRIC LIFT.

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Markets

Mid-Continent

TULSA, May 15.—Gasoline available for immediate delivery was tight in the Mid-Continent the past week, according to trade reports. Demand from jobbers, almost entirely against contracts, was brisk, refiners said. Four refiners reported buying gasoline to supplement their own production. One Oklahoma refiner said he had purchased 125 cars of 67-69 octane the past two weeks. Another said he was in the market for 50 cars of 70-72 octane and 25 cars of 62 octane and below. Higher quotations for some grades of gasoline were reported by refiners in some areas.

Sales of Grade 26-70 natural gasoline were reported at 2.5 cents, f.o.b. Group 3 and f.o.b. Breckenridge. Several 25-car purchases were said to have been made at that price by manufacturers for blending.

Mid-Western

CHICAGO, May 15.—Prices 0.125 to 0.25 cent higher for gasoline were reported by most refiners and tank car marketers here last week. Quotations reported ranged from 3.875 to 4.375 cents on 62 octane and below, 4.125 to 4.5 cents for 63-66 octane, 4.25 to 4.75 cents on 67-69 octane, and 4.5 to 5.125 cents on 70-72 octane. Open spot sales of 22 cars were reported during the week. Supplies continued to be closely held by refiners, resellers said.

Eastern

NEW YORK, May 15. — Baltimore gasoline prices were 0.25 cent higher at 6 to 6.25 cents when a supplier who had been quoting 5.75 cents, reported advancing his quotation to 6 cents the second week of May. No changes were reported in prices at other points along the eastern seaboard. There were reports of price shading at New York harbor, which, however, lacked confirmation.

Supplies of gasoline along the east coast were said to be somewhat below normal for the season.

Pennsylvania

CLEVELAND, May 15.—A further advance in wax featured western Pennsylvania refinery prices the second week in May. Bright stocks also were quoted higher by some refiners. Prices for other products generally were unchanged, according to reports.

Only four refiners reported offering wax. One refiner who had been quoting 2.85 cents, New York, for 124-126 A.m.p. white crude scale said he had advanced his price to 3 cents following a sale at 2.9 cents. Two refiners said they were quoting 2.9 cents for this grade, and the fourth refiner said he was asking 2.85 cents for 122-124 A.m.p.

Bright stocks, according to reports, were still available at 18.5 cents for 10 pour, 17.5 cents for 15 pour, and 15.5 cents for 25 pour, although two refiners said they were quoting prices 0.25 to 1 cent per gallon higher.

California

LOS ANGELES, May 13. — California bulk markets lacked particular feature, with quotations on most products reported unchanged. Recent spot sales of 400 e.p. gasoline and 41-43 w.w. kerosine in case lots for export showed slightly lower prices, in the neighborhood of $1.40 to $1.50 on the former and $1.30 to $1.40 on the latter.

Continued warm weather helped domestic gasoline and few retail signs could be found in the Los Angeles territory showing less than 13.9 cents on competitive grades which were quoted generally at 11.5 cents, including tax, at the rack of independent plants, according to reports.

Gulf

NEW YORK, May 15.—A Gulf refiner reported during the week ended May 13 that he had sold a mixed cargo consisting of 30,000 barrels of 61-63, 390 e. p., 65 octane gasoline at 4.75 cents; 30,000 barrels of 61-63, 390 e. p., 62 octane at 4.5 cents, 15,000 barrels of 40-43 diesel index gas oil at 3 cents, and 15,000 barrels of 41-43 w. w. kerosine at 3.375 cents, to a French buyer for June lifting. The same supplier subsequently announced that he had advanced his price for 41-43 w. w. kerosine to 3.5 cents.

Another refiner in the Gulf, operating on Mexican crude, said he was offering two cargoes of 60 octane, 64-66, 375 e. p. gasoline at 4 cents, f.o.b. Gulf.

Reports indicated an inquiry for a cargo of 61-63, 390 e. p., 68 octane gasoline for export shipment was in the market, but no action on this inquiry was reported up to the end of the week.

Bunker "C" fuel oil continued virtually unobtainable, according to reports of suppliers. No sales or changes in price postings, said to be purely nominal, were reported.

N. P. N. Gasoline Index

	Dealer T.w. Cents per	Tank Car Gal.
May 15	9.49	5.67
Month ago	9.37	5.53
Year ago	10.19	5.88

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 12 wholesale markets for regular-grade gasoline.

Wax

NEW YORK, May 15.—Prices for 122-124 A.m.p. white crude scale were 0.05 cent a pound higher at 2.85 cents at New York and New Orleans, according to reports the past week. Some sellers also said they had advanced their quotations for 124-126 A.m.p. scale 0.05 cent to 2.9 cents a pound. Some grades of scale continued scarce, reports indicated.

Fuel Oil

NEW YORK, May 15. — Fuel oil prices along the east coast for the most part were unchanged the past week, according to reports of suppliers. Some suppliers who had been quoting 4.5 cents and 4 cents for No. 1 and Nos. 2-3, respectively, at Boston and Providence, said they were now posting 4.375 and 3.875 cents for these grades. Prices at other points were reported unchanged.

Settlement of the strike in the coal industry relieved to some extent the tension over the shortage of heavy fuel oils. There continued to be little of these grades available but prices generally were unchanged, suppliers said.

* * *

TULSA, May 15. — Quotations for light fuel oils generally were reported unchanged in the Mid-Continent last week. Supplies were said to be closely held by refiners in most districts. Movements for heating purposes was negligible, refiners said.

No changes were reported in heavy fuel oil prices.

* * *

CHICAGO, May 15.—Summer temperatures prevailing throughout the past week curtailed jobber interest in all grades of light fuel oils, according to reports of resellers here.

Demand for light fuels for domestic use was practically negligible. Small-lot purchases of light grades of distillate for farm use were reported occasionally. No changes in quotations were reported during the week.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel of 42 gallons, wax and petrolatums in cents per pound in barrels, tank car lots, FOB refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Gasoline

Prices Effective	May 15	May 8
OKLAHOMA		
U. S. Motor: (Octane L-3)		
62 oct. & below	4.125– 4.375	4.125– 4.375
63-66 oct.	4.375– 4.625	4.375– 4.625
67-69 oct.	4.625– 4.875	4.625– 4.875
70-72 oct.	4.875– 5.125	4.875– 5.125
60-62, 400 e.p.	(h) 4.125–4.25	(h) 4.00 –4.25
WESTERN PENNA. REFINERY QUOTATIONS		
Bradford-Warren:		
Motor gasoline:		
U. S. Motor:		
Min. 65 oct.	(h) 6.25 –6.75	(h) 6.25 –6.75
Min. 70 oct.	(e)6.50	(e)6.50
"Q" gasoline	(h) 6.25 –6.75	(h) 6.25 –6.75
Other districts:		
Motor gasoline:		
U. S. Motor (58-62° gravity):	4.50 – 5.00	4.50 – 5.00
"Q" gasoline	6.25 – 6.50	6.25 – 6.50
CENTRAL MICHIGAN (a)		
Str.-Run Gasoline	4.50 – 4.75	4.50 – 4.75
U. S. Motor: (Octane L-3)		
67-69 octane	(e)6.50	(e)6.50
70-72 octane	7.25	7.25

Prices Effective	May 15	May 8
CALIFORNIA (3c tax to be added if used in state)		
U. S. Motor:		
54-58 gravity, for in-state shipment	7.25 – 9.25	7.25 – 9.25
54-58 gravity, for out-side state shipment	7.25 – 9.00	7.25 – 9.00
58-61 gravity, 375-400 e.p., 65 oct. & above	8.25 – 9.75	8.25 – 9.75
N. TEX. (b)		
U. S. Motor: (Octane L-3)		
62 oct. & below	4.125– 4.375	4.00 – 4.375
63-66 oct.	4.50 – 4.875	4.375– 4.875
67-69 oct.	4.625– 4.875	4.625– 4.875
70-72 oct.	4.875– 5.25	4.875– 5.25
60-62, 400 e.p.	(h)4.125	(h)4.00 –4.125
KANSAS (For Kansas destinations only)		
U. S. Motor: (Octane L-3)		
62 oct. & below	4.375– 5.00	4.375– 5.00
67-69 octane	4.625– 5.50	4.625– 5.50
70-72 octane	5.125– 5.875	5.125– 5.875
W. TEX. (b)		
U. S. Motor: (Octane L-3)		
62 oct. & below	(h) 4.00 –4.375	(h) 4.00 –4.375
63-66 oct.	(e) 4.625–4.75	(e) 4.625–4.75
67-69 oct.	(h) 4.75 –5.00	(h) 4.75 –5.00
70-72 oct.	(h) 5.00 –5.50	(h) 5.00 –5.50

Prices Effective	May 15	May 8
CENTRAL WEST TEXAS (Prices to truck transports)		
U. S. Motor Gasoline: (Octane L-3)		
62 oct. & below	(h) 4.00 –4.125	(h)4.00
63-66 octane	(e)4.625	(e)4.625
66-70 octane	(e)5.25	(e)5.25
E. TEX.		
U. S. Motor Gasoline, (Octane L-3)		
70-72 oct.	(h) 4.50 –4.75	(h) 4.50 –4.75
60-62, 400 e.p.	(h)4.25	(h)4.25
N. LA. (For shipment to La. & Ark.)		
U. S. Motor: (Octane L-3)		
62 oct. & below	(h) 4.125–4.375	(h) 4.125–4.375
63-66 oct.	(e) 4.375–4.625	(e) 4.375–4.625
67-69 oct.	(e) 4.625–4.875	(e) 4.625–4.875
70-72 oct.	(e)4.875–5.375	(e) 4.875–5.375
ARKANSAS (F.o.b. Ark. plant of one refiner, for shipment to Ark. & La.)		
U. S. Motor: (Octane L-3)		
62 octane & below	4.375	4.25
67-69 oct.	4.875	4.75
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
U. S. Motor	(j)	....
Above 65 oct.	(j)	....
70-72 octane	7.375	7.25

(Continued on next page)

(a) Prices FOB. Central Michigan refinery group basis, for shipment within Mich. Shipments may originate at plants outside Central group. (b) For shipment to Texas and New Mexico destinations; Group 3 prices quoted for northern shipment. (c) Excluding Detroit shipment. (e) One refiner quoting. (f) Two suppliers quoting. (g) To resellers holding licenses. (h) Two refiners quoting. (i) No quotations reported. (j) Prices discontinued.

MID-WESTERN TANK CAR MARKET

Prices in this Midwestern Tank Car Market table are gathered from refiners and tank car marketers or brokers from their offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight rate basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Generally when prices are quoted in this Chicago market, the origin of the material is not known at the time the quotation is given, oftentimes even with the quoting refiners who have refineries in more than one refining district. All other gasoline prices are given by and for the particular refining district where the material is made and from which it is shipped.

Gasoline

Prices Effective	May 15	May 8
U. S. Motor: (Octane L-3)		
62 oct. and below	3.875– 4.375	3.75 – 4.375
63-66 oct.	4.125– 4.50	4.00 – 4.375
67-69 oct.	4.25 – 4.75	4.125– 4.75
70-72 oct.	4.50 – 5.125	4.50 – 5.125

Kerosine

41-43 gravity, w.w.	3.50 – 4.125	3.50 – 4.125
42-44 gravity, w.w.	3.625– 4.375	3.625– 4.375

Fuel and Gas Oils

Prices Effective	May 15	May 8
No. 1 p.w.	3.25 – 3.875	3.25 – 3.875
No. 1 straw	3.25 – 3.50	3.25 – 3.50
No. 2 straw	3.125– 3.50	3.125– 3.50
No. 3	2.875– 3.125	2.875– 3.125
No. 5	$0.575–$0.70	$0.575–$0.70

Prices Effective	May 15	May 8
No. 6	$0.35 –$0.45	$0.35 –$0.45
U. G. I. gas oil	2.625– 3.00	2.625– 3.00
Range oil	3.375– 4.00	3.375– 4.00

Naphtha and Solvent

Stoddard solvent	5.875	5.875
Cleaners' naphtha	6.375	6.375
V. M. & P. naphtha	6.375	6.375
Mineral spirits	5.375	5.375
Rubber solvent	6.375	6.375
Lacquer diluent	7.375	7.375

Daily range of gasoline prices as reported in PLATT'S OILGRAM (Week Ended May 12, 1939)

	May 8	May 9	May 10	May 11	May 12
U. S. Motor, (Octane Number determined according to L-3 Method in Okla., Texas and Mid-Western Districts):					
62 octane and below:					
Oklahoma	4.125– 4.375	4.125– 4.375	4.125– 4.375	4.125– 4.375	4.125– 4.375
(a) North Texas	4.00 – 4.375	4.125– 4.375	4.125– 4.375	4.125– 4.375	4.125– 4.375
West Texas	(d)4.00 –4.375	(d) 4.00 –4.375	(d) 4.00 –4.375	(d) 4.00 –4.375	(d) 4.00 –4.375
Mid-Western (Group 3 basis)	3.75 – 4.375	3.75 – 4.375	3.875– 4.375	3.875– 4.375	3.875– 4.375
63-66 octane:					
Oklahoma	4.375– 4.625	4.375– 4.625	4.375– 4.625	4.375– 4.625	4.375– 4.625
(a) North Texas	4.375– 4.875	4.50 – 4.875	4.50 – 4.875	4.50 – 4.875	4.50 – 4.875
West Texas	(b)4.625–4.75	(b) 4.625–4.75	(b)4.625– 4.75	(b) 4.625–4.75	(b)4.625– 4.75
Mid-Western (Group 3 basis)	4.00 – 4.375	4.00 – 4.50	4.125– 4.50	4.125– 4.50	4.125– 4.50
67-69 octane:					
Oklahoma	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875
(a) North Texas	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.50 – 4.875
West Texas	(d) 4.75 –5.00	(d) 4.75 –5.00	(d)4.75 –5.00	(d) 4.75 –5.00	(d) 4.75 –5.00
Mid-Western (Group 3 basis)	4.125– 4.75	4.125– 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75
70-72 octane:					
Oklahoma	4.875– 5.125	4.875– 5.125	4.875– 5.125	4.875– 5.125	4.875– 5.125
(a) North Texas	4.875– 5.25	4.875– 5.25	4.875– 5.25	4.875– 5.25	4.625– 4.875
West Texas	(d) 5.00 –5.50	(d) 5.00 –5.50	(d) 5.00 –5.50	(d) 5.00 –5.50	(d) 5.00 –5.50
East Texas	(d) 4.50 –5.125	(d) 4.50 –4.75	(d) 4.50 –4.75	(d) 4.50 –4.75	(d) 4.50 –4.75
Mid-Western (Group 3 basis)	4.50 – 5.00	4.50 – 5.125	4.50 – 5.125	4.50 – 5.125	4.50 – 5.125
Motor Gasoline, 60-64 octane:					
New York harbor	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Philadelphia district	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Baltimore district	5.75 – 6.00	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Motor Gasoline, 65 octane & above:					
New York harbor	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Philadelphia district	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Baltimore district	5.75 – 6.00	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
U. S. Motor, 58-62°:					
Other districts (Western Penna.)	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00
Motor Gasoline, Min. 65 octane:					
Bradford-Warren (Western Penna.)	(d) 6.25 –6.75	(d) 6.25 –6.75	(d) 6.25 –6.75	(d) 6.25 –6.75	(d) 6.25 –6.75
Motor Gasoline, Min. 70 octane:					
Bradford-Warren (Western Penna.)	(b)6.50	(b)6.50	(b)6.50	(b)6.50	(b)6.50
"Q" Gasoline:					
Bradford-Warren (Western Penna.)	(d) 6.25 –6.75	(d) 6.25 –6.75	(d)6.25 –6.75	(d) 6.25 –6.75	(d) 6.25 –6.75
Other Districts (Western Penna.)	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50

(a) For shipment to Texas and New Mexico destinations: Group 3 prices are quoted on northern shipment. (b) One refiner quoting. (c) To resellers holding licenses. (d) Two refiners quoting.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon except heavy fuel oils in dollars per barrel of 42 gallons, tank car lots, FOB refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Natural Gasoline

(Prices to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

Prices Effective	May 15	May 8
FOB GROUP 3		
Grade 26-70	(m)2.50	(m)2.50
FOB BRECKENRIDGE		
Grade 26-70	(l)2.50	(m)2.50
CALIFORNIA (F.o.b. plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	6.25 – 6.75	6.25 – 6.75

Kerosine

WESTERN PENNA. REFINERY QUOTATIONS

Bradford-Warren:		
45 gravity w.w.	5.00	5.00
46 gravity w.w.	(e)5.375	(e) 5.375–5.50
Other districts:		
45 gravity w.w.	5.00 – 5.25	5.00 – 5.25
46 gravity w.w.	5.125– 5.25	5.125– 5.375
47 gravity w.w.	5.25 – 5.50	5.25 – 5.50
CENTRAL MICHIGAN (a)		
47-49 gravity w.w.	5.05 – 5.25	5.00 – 5.25
OKLAHOMA		
41-43 gravity w.w.	3.875– 4.25	3.875– 4.25
42-44 gravity w.w.	4.00 – 4.625	4.00 – 4.625
KANSAS (For Kansas destinations only)		
41-43 gravity w.w.	(c)4.25	(c)4.25
42-44 gravity w.w.	4.375– 4.50	4.375– 4.50
N. TEX. (b)		
41-43 gravity w.w.	4.00 – 4.50	4.00 – 4.50
N. LA. (For shipment to La. and Ark.)		
41-43 gravity w.w.	(h) 4.00–4.125	(h)4.00 –4.125
ARK. (F.o.b. Ark. plant of one refiner for shipment to Ark. and La.)		
41-43 gravity w.w.	4.25	4.25
CALIFORNIA		
40-43 gravity w.w.	5.00 – 7.00	5.00 – 7.00

Gas *and* Fuel Oils

WESTERN PENNA. REFINERY QUOTATIONS

Bradford-Warren:		
36-40 gravity	(e)4.625	(e)4.625
Other districts: (Excluding Pittsburgh District Prices)		
36-40 gravity	4.25 – 4.375	4.25 – 4.375
CENTRAL MICHIGAN (a)		
P.W. Distillate	4.25 – 4.75	4.25 – 4.75
No. 3 gas oil, Str.	4.00 – 4.25	4.00 – 4.25
U.G.I. gas oil	3.75 – 4.00	3.75 – 4.00
Fuel Oils (Vis. at 100):		
500-700 Vis.	2.00 – 2.50	2.00 – 2.375
300-500 Vis.	2.50 – 2.75	2.25 – 2.50
100-300 Vis.	2.625– 3.25	2.375– 3.00
OKLAHOMA		
No. 1 prime white	3.375– 4.00	3.375– 4.00
No. 1 straw	(h) 3.375–3.625	(h) 3.375–3.625
No. 2 straw	3.25 – 3.625	3.25 – 3.625
No. 2 dark	(h) 3.125–3.25	(h) 3.125–3.25
U.G.I. gas oil	(h) 3.25 –3.375	(h) 3.25 –3.375
28-30 gravity fuel oil	(e)3.25	(e)3.25
28-30 gravity zero fuel	2.625– 3.25	2.625– 3.25
24-26 gravity fuel	(e) $0.85–$0.90	(e) $0.85–$0.90
14-16 gravity fuel	(e)$0.70	(e)$0.70
No. 6 fuel	(h) $0.35–$0.45	(h) $0.35–$0.45
Range oil	(h)3.625	(h)3.625
KANSAS (For Kans. destinations only).		
No. 1 p.w. fuel oil	3.75 – 4.00	3.75 – 4.00
10-14 gravity fuel oil	$0.45 –$0.80	$0.45 –$0.80
N. TEX. (b)		
No. 1 Prime white	(e)3.75	(e)3.75
N. LA. (For shipment to La. and Ark.)		
20-24 gravity fuel	$1.00–$1.05	(e) $1.00–$1.05
16-20 gravity fuel	(e) $0.80–$0.85	(e) $0.80–$0.85
10-14 gravity fuel	(e) $0.70–$0.75	(e) $0.70–$0.75
ARK. (F.o.b. Ark. plant of one refiner, for shipment to Ark. and La.)		
No. 2 fuel	3.375	3.375
28-30 gravity gas oil, zero	3.125	3.125
Tractor Fuel	(j)4.50	(j)4.50

Prices Effective	May 15	May 8
CALIFORNIA		
San Joaquin Valley:		
Heavy fuel	$0.50 –$0.75	$0.50 –$0.75
Light fuel	$0.70 –$0.85	$0.70 –$0.85
Diesel fuel (per gal.)	2.50 – 4.00	2.50 – 4.00
Stove dist. (per gal.)	3.00 – 5.00	3.00 – 5.00
Los Angeles:		
Heavy fuel	$0.50 –$0.90	$0.50 –$0.90
Light fuel	$0.60 –$1.00	$0.60 –$1.00
Diesel fuel (per gal.)	2.125– 4.00	2.125– 4.00
Stove dist. (per gal.)	2.25 – 5.00	2.25 – 5.00
San Francisco:		
Heavy fuel	$0.95	$0.95
Light fuel	$1.05	$1.05
Diesel fuel (per gal.)	4.50	4.50
Stove dist. (per gal.)	5.50	5.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Neutral Oils

WESTERN PENNA. REFINERY QUOTATIONS

Viscous Neutrals No. 3 col. (*Viscosity at 70° F.*) 200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	(e)19.50	(e)19.50
10 p.t.	(e)18.50	(e)18.50
15 p.t.	(e)18.00	(e)18.00
25 p.t.	16.50 –17.00	16.50 –17.00
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	(e)18.50	(e)18.50
10 p.t.	(e)17.50	(e)17.50
15 p.t.	(e)16.50	(e)16.50
25 p.t.	14.50 –15.50	14.50 –15.50
SOUTH TEXAS		
Vis. Color		
Pale Oils: (*Vis. at 100°F.*)		
100 No. 1½-2½	4.50 – 5.00	4.50 – 5.00
200 No. 2-3	6.00 – 6.25	6.00 – 6.25
300 No. 2-3	6.50 – 6.75	6.50 – 6.75
500 No. 2½-3½	7.50 – 7.75	7.50 – 7.75
750 No. 3-4	8.00 – 8.25	8.00 – 8.25
1200 No. 3-4	8.375– 8.75	8.375– 8.75
2000 No. 4	8.50 – 9.25	8.50 – 9.25
Red Oils:		
200 No. 5-6	6.00 – 6.25	6.00 – 6.25
300 No. 5-6	6.50 – 6.75	6.50 – 6.75
500 No. 5-6	7.50 – 7.75	7.50 – 7.75
750 No. 5-6	8.00 – 8.25	8.00 – 8.25
1200 No. 5-6	8.375– 8.75	8.375– 8.75
2000 No. 5-6	8.50 – 9.25	8.50 – 9.25

Note: Red oil prices cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Vis. at 100° F.; F.o.b. Tulsa basis).

Pale Oils: (0 to 10 P.P.) Vis. Color		
60-85—No. 2	5.50	5.50
86-110—No. 2	6.00	6.00
150—No. 3	9.00	9.00
180—No. 3	9.50 –10.00	9.50 –10.00
200—No. 3	10.00 –10.50	10.00 –10.50
250—No. 3	11.00 –11.50	11.00 –11.50
280—No. 3	12.50	12.50
300—No. 3	13.00	13.00
Red Oils:		
180—No. 5	(e)9.00	(e)9.00
200—No. 5	9.00 – 9.50	9.00 –10.00
280—No. 5	(h)11.50–11.75	11.50 –11.75
300—No. 5	(h)12.00	(h)12.00

Note: The following oils, of 15 to 25 p.p., are generally quoted these amounts under 0-10 p.p.; viscous oils, 0.5c; non-viscous, 0.25c. Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

Pale Oils 0 to 10 p.p. Vis. Color		
60-85—No. 2	7.25	7.25
86-110—No. 2	7.75	7.75
150—No. 3	9.00	9.00
180—No. 3	10.00	10.00
200—No. 3	10.50	10.50
250—No. 3	11.50	11.50

Prices Effective	May 15	May 8
CHICAGO (Continued)		
Red Oils:		
180—No. 5	9.00	9.00
200—No. 5	9.50	9.50
250—No. 5	10.50	10.50
280—No. 5	11.50	11.50
300—No. 5	11.75	11.75

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower. To obtain delivered prices in Chicago, add 0.25c per gal.

Cylinder Stocks

MID-CONTINENT (F.o.b. Tulsa basis)

Bright Stocks:		
190-200 Vis. at 210° D.	(e)19.00	(e)19.00
150-160 Vis. at 210°D:		
0 to 10 p.p.	14.25 –16.00	14.25 –16.00
10 to 25 p.p.	13.50 –15.00	13.50 –15.00
25 to 40 p.p.	(h)13.25–13.50	(h) 13.25–13.50
150-160 vis. at 210° E.	12.50 –14.50	12.50 –14.50
120 Vis. at 210° D		
0 to 10 p.p.	(h) 13.75–14.50	(h) 13.75–14.50
25 to 40 p.p.	(e)12.75	(e)12.75
600 S.R. Dark Green	(e)5.50	(e)5.50
600 S.R. Olive Green	(h)7.00 –7.50	(h) 7.00 –7.50
631 S.R.	(e)12.50	(e)12.50
Black Oil	3.50 – 4.00	3.50 – 4.00

CHICAGO (Viscosity at 210°)

Unfiltered Steam Refined:		
140	9.00	9.00
160	10.00	10.00
200	11.00	11.00
Bright stocks, 160 vis. at 210. No. 8 color:		
0 to 10 p.p.	15.75	15.75
15 to 25 p.p.	14.75	14.75
30 to 40 p.p.	14.25	14.25
E filtered Cyl. Stock	13.50	13.50

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

WESTERN PENNA. REFINERY QUOTATIONS

600 S.R. filterable	8.00 –10.00	8.00 –10.00
650 S.R.	10.00 –11.50	10.00 –11.50
600 fl.	10.50 –12.00	10.50 –12.00
630 fl.	13.00 –14.00	13.00 –14.00
Bright stock, 145-155 vis. at 210°, 540-550 flash, No. 8 color:		
10 p.t.	18.50 –19.50	18.50 –19.00
15 p.t.	17.50 –18.50	17.50 –18.00
25 p.t.	15.50 –16.50	15.50 –16.00

Petrolatums

WESTERN PENNA. (In bbls., carloads; in tank cars, 0.5c per lb. less. One refiner reports he equalizes freight with nearest refinery to destination)

Snow White	5.875– 6.125	5.875– 6.125
Lily White	4.875– 5.125	4.875– 5.125
Cream White	3.875– 4.125	3.875– 4.125
Light Amber	2.50	2.50
Amber	2.25	2.25
Red	(e)2.125	(e)2.125

Wax

WESTERN PENNA. REFINERY QUOTATIONS
In bbls., carloads, New York.

122-124 A.m.p., w.c. scale	(e)3.00	(e)2.85
124-126 A.m.p., w.c. scale	2.90 – 3.00	2.85 – 2.90

OKLAHOMA (In bbls. or burlap bags, carloads)

124-126 A.m.p., w.c. scale	(h)3.00	(h)3.00

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:		
122-124	(i)4.25	(i)4.25
125-127	(i)4.35	(i)4.35
127-129	(i)4.70	(i)4.70
130-132	(i)5.00	(i)5.00
132-134	(i)5.25	(i)5.25
135-137	(i)6.00	(i)6.00

(a) Prices FOB Central Michigan refinery gro up basis, for shipment within Mich. Shipments may originate at plants outside Central group. (b) For shipment to Texas and New Mexico destinations: Group 3 prices quoted on northern shipments. (c) Excluding Detroit shipment. (e) One refiner quoting. (f) No quotations reported. (g) To resellers holding licenses. (h) Two refiners quoting. (i) Same prices quoted in bags or slabs loose. (j) For shipment to Ark. points only. (k) Two suppliers quoting. (l) Quotations. (m) Sales

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for March 29, April 12, and April 19, 1939, or write to NPN. These prices in effect May 15, 1939, as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Esso Solene (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
*Atlantic City, N. J.	6.9	8.7	4	7
*Newark, N. J.	6.9	8.7	4	7
Annapolis, Md.	7.85	9.35	5	8
Baltimore, Md.	7.25	8.75	5	8
Cumberland, Md.	8.65	11.15	5	10
Washington, D. C.	7.5	9	3	9.5
Danville, Va.	8.45	10.95	6	12.9
Norfolk, Va.	7.25	9.75	6	11.5
Petersburg, Va.	7.55	10.05	6	11.7
Richmond, Va.	7.55	10.05	6	10.7
Roanoke, Va.	8.75	11.25	6	11
Charleston, W. Va.	8.05	10.55	6	12.6
Parkersburg, W. Va.	7.35	9.35	6	11.2
Wheeling, W. Va.	8.35	10.25	6	12.2
Charlotte, N. C.	8.65	11.15	7	12.1
Hickory, N. C.	9.15	11.65	7	12.5
Mt. Airy, N. C.	8.95	11.45	7	12.3
Raleigh, N. C.	8.25	10.75	7	11.6
Salisbury, N. C.	8.75	11.25	7	12.2
Charleston, S. C.	7.25	9.75	7	10.6
Columbia, S. C.	8.25	10.75	7	11.6
Spartanburg, S. C.	8.95	11.45	7	12.4

Discount to undivided dealers: thru territory, except New Jersey points, which see in "Note" below: Dealer t.w. price less 0.5c per gal.

*Effective Dec. 1, 1938, S. O. New Jersey posted a minimum retail resale price of 11.2c thru New Jersey, except Trenton area and Cumberland county.

Note: While the above posted prices continue at Atlantic City and Newark, N. J., dealers will pay a net price of 8.2c per gal. for Esso Solene. Dealers having pumps marked only Esso, Esso Solene and "Standard" White gasoline will pay 7.7c per gal. for Esso Solene.

Kerosine Discount: 1c off t.w. price or 25 gals., or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)

Socony Mobilgas (*Regular Grade*)

	Consumer Tank Car	"Split" Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Metropolitan N.Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	6.7	8.3	*5	6.75
Borough of Richmond (Staten Is.)	6.7	8.5	*5	6.75
Albany, N. Y.	6.6	8.7	5	7
Binghamton, N. Y.	7.7	9.7	5	8
Buffalo, N. Y.	7.4	6.8	5	7
Jamestown, N. Y.	7	7.9	5	7.5
Plattsburg, N. Y.	7.2	9.5	5	7.5
Rochester, N. Y.	7.6	7.75	5	7.75
Syracuse, N. Y.	7.2	9.2	5	7.25
Danbury, Conn.	7.4	9.5	4	7.75
Hartford, Conn.	7	9.1	4	6.50
New Haven, Conn.	6.9	8.25	4	6
Bangor, Me.	7	9	5	7
Portland, Me.	6.6	8.5	5	6.75
Boston, Mass.	6.6	8	4	6.5
Concord, N. H.	7.4	9.5	5	7.5
Lancaster, N. H.	8.2	10.5	5	8.5
Manchester, N. H.	7.3	9.1	5	7.25
Providence, R. I.	6.6	8.3	4	6.5
Burlington, Vt.	7.1	8.5	5	7.25
Rutland, Vt.	7.5	9	5	7.5

*Plus 2% city sales tax computed at time of each sale.

Discount to undivided dealers: 0.5c less than "split" dealer t.w.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Philadelphia Pa.	7	8	5	10
Pittsburgh	8	9	5	10.5
Allentown	7.5	9	5	10.5
Erie	8	9	5	10
Scranton	7.5	9	5	10.5
Altoona	8	8.5	5	10.5
Harrisburg	7.5	9	5	10.5
Williamsport	8	9.5	5	10.5
Dover, Del.	...	9	5	10.5
Wilmington	...	8.5	5	9.75
Boston, Mass.	...	8	4	6.25
Springfield, Mass.	...	8.8	4	7
Worcester, Mass.	...	8.8	4	7
Fall River, Mass.	...	8.5	4	7
Hartford, Conn.	...	8.8	4	6.5
New Haven, Conn.	...	8.25	4	7
Providence, R. I.	...	8.3	4	6.5
Atlantic City, N. J.	...	8.2	4	7
Camden, N. J.	...	8.1	4	7
Trenton, N. J.	...	8.2	4	7
Annapolis, Md.	...	9.35	5	9.5
Baltimore, Md.	...	8.75	5	8
Hagerstown, Md.	...	9.85	5	10
Richmond, Va.	...	10.05	6	10.7
Wilmington, N. C.	...	9.85	7	10.8
Brunswick, Ga.	...	8.5	7	*10.5
Jacksonville, Fla.	...	8.5	8	10
Vicksburg, Miss.	10	7.5	7	....
Birmingham, Ala.	11	8.5	*8	....
Mobile, Ala.	9.5	7	*9	....
Montgomery, Ala.	11	8.5	*9	....
Atlanta, Ga.	11.5	9	7	....
Augusta, Ga.	11	8.5	7	....
Macon, Ga.	11.5	9	7	....
Savannah, Ga.	9.5	7	7	....
Jacksonville, Fla.	10	7.5	8	....
Miami, Fla.	10	7.5	8	....
Pensacola, Fla.	10	7.5	*9	....
Tampa, Fla.	10	7.5	8	....

*Georgia has kerosine tax of 1c per gal., not included in above price.

Discount to undivided dealers: Dealer t.w. less 0.5c per gal. except in Georgia and Florida, dealer t.w. and undivided dealer price is same.

S. O. Ohio

Sohio X-70 Gasoline

(Regular Grade)

	Consumer T.W.	†Divided Dlr.	‡S.S. Taxes	Gasoline Taxes	Kerosine T.W.
Ohio, Statewide	10.5	9.5	12.5	5	*12
Akron	10.5	8.5	10.5	5	*8.5
Cincinnati	10.5	9	11.5	5	*12
Cleveland	10.5	9.5	12.5	5	*12
Columbus	10.5	9	11.5	5	*12
Dayton	10.5	9	11.5	5	*12
Marietta	10.5	9	11.5	5	*12
Portsmouth	10.5	9.5	12.5	5	*12
Toledo	10.5	8	10.5	5	*12
Youngstown	10.5	9	11.5	5	*11.5

Renown Gasoline

(Third Grade)

Ohio, Statewide	10	9	11	5	....
Akron	10.5	8.5	10.5	5	....
Cincinnati	10.5	9	11.5	5	....
Cleveland	10	9	11	5	....
Columbus	10	8.5	10	5	....
Dayton	10.5	9	11.5	5	....
Marietta	10.5	9	11.5	5	....
Portsmouth	10	9	11	5	....
Toledo	10	7.5	9	5	....
Youngstown	10.5	9	11.5	5	....

Note: Prices at other Ohio points may be obtained by writing NPN.

*Ohio has kerosine tax of 1c per gal., not included in above prices.

†This price also to authorized agents, exclusive of 0.5c rental.

‡Prices are at company-operated service stations.

Discount to undivided dealers: 0.5c less than divided dealer t.w.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices", S. O. Ohio says.

S. O. Kentucky

Crown Gasoline (*Regular Grade*)

	Consumer T.W.	Net Dlr.	Gasoline Taxes	Kerosine T.W
Covington, Ky.	11.5	8.5	6	9.5
Lexington, Ky.	13	10	6	10
Louisville, Ky.	11.5	8.5	6	9
Paducah, Ky.	12	9	6	9
Jackson, Miss.	10.5	7.5	7	*9
Vicksburg, Miss.	12	9	7	*8.5
Birmingham, Ala.	13	10	*8	8.5
Mobile, Ala.	12	9	*9	8.5
Montgomery, Ala.	12	10	*9	*9.5
Atlanta, Ga.	13.5	10.5	7	*8
Augusta, Ga.	12.5	9.5	7	*8
Macon, Ga.	13	10	7	*9
Savannah, Ga.	11.5	8.5	7	*7
Jacksonville, Fla.	11.5	8.5	8	8
Miami, Fla.	11.5	8.5	8	8
Pensacola, Fla.	11.5	8.5	*9	8
Tampa, Fla.	11.5	8.5	8	8

Kyso Gasoline (*Third Grade*)

Covington, Ky.	10	7.5	6	....
Lexington, Ky.	11.5	9	6	....
Louisville, Ky.	10	7.5	6	....
Paducah, Ky.	10	7.5	6	....
Jackson, Miss.	8.5	6	7	....

Discounts to all tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below, regardless of quantity purchased, per month

*Taxes: In the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have kerosine taxes of 1c per gal., and Mississippi 0.5c, not included in above prices.

S. O. Indiana

Red Crown (*Regular Grade*) Stanolind (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Prices Red Crown	Stanolind	Gasoline Taxes	Kerosine T.W.
Chicago, Ill.	11.1	8.1	6.4	4	10
Decatur, Ill.	11.1	8.6	6.7	4	10
Joliet, Ill.	11.1	8.6	8.4	4	10
Peoria, Ill.	11.1	9.1	8.5	4	10
Quincy, Ill.	10.9	8.9	5.8	4	8.7
Indianapolis, Ind.	11.8	10.3	8.9	5	*10
Evansville, Ind.	11.6	10.1	7	5	*10.5
South Bend, Ind.	12.1	10.6	9.2	5	*9
Detroit, Mich.	9.1	7.6	7.1	4	7.1
Grand Rapids, Mich.	10	8.5	8	4	9.7
Saginaw, Mich.	11.8	9.1	8.1	4	9.3
Green Bay, Wis.	11.9	10	7.8	5	10.3
Milwaukee, Wis.	9.9	8.4	7.3	5	10.2
La Crosse, Wis.	11.5	10	9.5	5	10.4
Minneapolis-St. Paul	11.5	10	9	5	10.4
Duluth, Minn.	11.9	10.4	9.4	5	10.8
Mankato, Minn.	11.5	10	9.5	5	9.4
Des Moines, Ia.	10.9	9.4	8	4	*9.8
Davenport, Ia.	11.1	9.6	9.1	4	*10
Mason City, Ia.	11.3	9.8	9.1	4	*10.2
St. Louis, Mo.	10.2	8.7	7.5	*4	8
Kansas City, Mo.	10.4	8.4	6.9	*4	8
St. Joseph, Mo.	10.4	8	7	*4	8.4
Fargo, N. D.	12.7	11.2	10.7	4	11.6
Huron, S. D.	12	10.5	10	5	10.9
Wichita, Kans.	9.9	7.1	6.5	4	7.4

*Taxes: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax. Kerosine taxes: Indiana has 4c, Iowa 3c per gal. state tax, not included in above prices.

S. O. Nebraska

Standard Red Crown Gasoline (*Regular Grade*)

	T.W.	Dealer	Gasoline Taxes	Kerosine T.W.
Omaha, Neb.	11.5	10	6	10.3
McCook	11	8	6	9
Norfolk	10	8.9	6	9
North Platte	12.3	9.9	6	11.1
Scottsbluff	11	8.9	6	11

S. O. Louisiana

Esso Solene (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Little Rock, Ark.	7.25	9.75	7.5	10
Alexandria, La.	6.75	9.25	8	*11.5
Baton Rouge, La.	6.75	9.25	8	*9.5
New Orleans, La.	6.75	9.25	*10	*9
Lake Charles, La.	6.75	9.25	8	*11.5
Shreveport, La.	5.5	8	8	*10
Lafayette, La.	7	9.5	8	*9
Bristol, Tenn.	10.25	8.5	8	13
Chattanooga, Tenn.	9.5	11	8	14
Knoxville, Tenn.	10	12.5	8	14.5
Memphis, Tenn.	8	10.5	8	12.5
Nashville, Tenn.	9	11.5	8	12

*Taxes: New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana has kerosine tax of 1c per gal.; in addition New Orleans has 1c parish tax, none of which are included in above prices.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Above prices include these inspection fees on both gasoline and kerosine unless otherwise specified, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida 1/8c; Illinois, 3/100c; Indiana, 1/5c per gal. in lots up to 25 bbls.; 2/25c per gal. in lots of 25 bbls. or more; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal. lots of more than 50 in bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee, 2/5c; and Wisconsin, 3/100c.

Kerosine inspection fee only: Iowa, 3/50c; Michigan, 1/5c per gal.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include* 1c *federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied, are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for March* 29, *April* 12, *and April* 19, 1939, *or write to NPN. These prices in effect May* 15, 1939, *as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

Humble Oil & Refining Co.

Humble Motor Fuel
(Regular Grade)

	*T.W.	S.S.	Gasoline Taxes	Kerosine T.W.
Dallas, Tex	8	12	5	8
Ft. Worth, Tex	8	12	5	7
Houston, Tex	8	12	5	8
San Antonio, Tex	9	13	5	8

U. S. Motor Gasoline
(Third Grade)

Dallas, Tex	6.5	9	5	
Ft. Worth, Texas	6.5	9	5	
Houston, Tex	6.5	..	5	
San Antonio, Tex	6.5	..	5	

Thriftane
(Leaded, 67 Octane, Purple Gasoline)

Houston	7	10	5
San Antonio	8	11	5

*These tank wagon prices apply to all classes of dealers and consumers.

Continental Oil

Conoco Bronz-z-z (Regular Grade)

	Consumer T.W.	Dealer	Gasoline Taxes	Kerosene T.W.
Denver, Col	12.5	10.5	5	11.5
Grand Junction, Col	15	13	5	15
Pueblo, Col	11	9	5	9
Casper, Wyo	14	12	5	11.5
Cheyenne, Wyo	12	10	5	13
Billings, Mont	12	12	6	13
Butte, Mont	13.5	13.5	6	15.5
Great Falls, Mont	13	13	6	15.5
Helena, Mont	14	14	6	15.5
Salt Lake City, Utah	12	12	5	16
Boise, Ida	14.1	14.1	6	18
Twin Falls, Ida	14.6	14.6	6	18
Albuquerque, N. M	10	10	†6.5	10
Roswell, N. M	8.5	8.5	†6.5	8
Santa Fe, N. M	10	10	*7	10
Ft. Smith, Ark	9	9	5	7.5
Little Rock, Ark	9.25	9.25	7.5	8
Texarkana, Ark	8	8	5	8
Muskogee, Okla	7	7	5	7
Oklahoma City, Okla	6	6	5	6.5
Tulsa, Okla	7	7	5	7

Demand Gasoline
(Third Grade)

Denver, Col	10.5	9.5	5	....
Grand Junction, Col	13	12	5	....
Pueblo, Col	9	8	5	....
Casper, Wyo	12	11	5	....
Cheyenne, Wyo	10	9	5	....
Billings, Mont	11	11	6	....
Butte, Mont	10.5	10.5	6	....
Great Falls, Mont	10	10	6	....
Helena, Mont	13	13	6	....
Salt Lake City, Utah	11	11	5	....
Boise, Ida	13.1	13.1	6	....
Twin Falls, Ida	13.6	13.6	6	....
Albuquerque, N. M	8	8	†6.5	....
Roswell, N. M	7.5	7.5	†6.5	....
Santa Fe, N. M	7	7	*7	....
Ft. Smith, Ark	6.5	6.5	5	....
Little Rock, Ark	8	8	7.5	....
Texarkana, Ark	6.5	6.5	5	....
Muskogee, Okla	6	6	5	....
Oklahoma City, Okla	5	5	5	....
Tulsa, Okla	6	6	5	....

†Includes city tax of 0.5c.
*Includes 1c city tax.
‡Prices are in t.w. deliveries to consumers and dealers.
**Prices include 0.1c to cover 1-mill tax for toll bridges.

S. O. California

Standard Gasoline
(Regular Grade)

	T.W.	S.S.	Gasoline Taxes	Kerosine T.W.
San Francisco, Cal	13.5	14.5	4	11.5
Los Angeles, Cal	13	14	4	10
Fresno Cal	14.5	15.5	4	12.5
Phoenix, Ariz	15.5	16.5	6	*12.5
Reno, Nev	15.5	16.5	5	13.5
Portland, Ore	14	15	6	13.5
Seattle, Wash	14	15	6	†13.5
Spokane, Wash	16	17	6	†16.5
Tacoma, Wash	14	15	6	13.5

Flight Gasoline
(Third Grade)

San Francisco, Cal	12	13	4	....
Los Angeles, Cal	11.5	12.5	4	....
Fresno, Cal	13	14	4	....
Reno, Nev	14	15	5	....
Phoenix, Ariz	11	12	6	....
Portland, Ore	12.5	13.5	6	....
Seattle, Wash	12.5	13.5	6	....
Spokane, Wash	14.5	15.5	6	....
Tacoma, Wash	12.5	13.5	6	....

*Arizona has kerosine tax of 5c per gal., not included in above prices.

†Washington has 0.25c per gal. tax on kerosine sales, not included in above prices.

Discount to 100% *dealers, thru territory,* off posted t.w. prices, on gasolines: on Standard Ethyl, Standard Gasoline and Stanavo Aviation, 3c per gal.; on Flight gasoline, 2c.

Canada

PRICES OF IMPERIAL OIL LTD.
Per Imperial Gallon, which is 1.2 U. S. Gallons

3-Star Imperial Gasoline

	(Regular Grade) T.W.	Gasoline Taxes	Kerosine T.W.
Hamilton, Ont	15	8	15.5
Toronto, Ont	15	8	15.5
Brandon, Man	21	7	22
Winnipeg, Man	19.5	7	20.5
Regina, Sask	19	7	21
Saskatoon, Sask	21.3	7	23.3
Edmonton, Alta	19.5	7	21.5
Calgary, Alta	16.5	7	18.5
Vancouver, B. C	16	7	23
Montreal, Que	14	8	14.5
St. John, N. B	13.5	10	17.5
Halifax, N. S	13.5	10	17.5

Discounts to undivided dealers, 1c off t.w. price, except Maritime Provinces where undivided dealers pay t.w. price. Divided dealers pay t.w. price, thru territory.

Aviation Gasoline

Following are tank car, tank wagon or dealer prices, as indicated, of aviation gasoline in several marketing territories.

S. O. OHIO
Thru Ohio
Esso Aviation

	Consumer T.W.	Gasoline Taxes
74 octane	15.5	5
80 octane	16.5	5
87 octane	17.5	5

Discounts: For delivery on contract to hangar operators and resellers: 2c below consumer posted t.w. price, shown above.

S. O. INDIANA
Stanavo Ethyl Aviation Gasoline
73 Octane Number

Chicago, Ill	14.9	
Detroit, Mich	16.5	4
Milwaukee, Wis	15.1	5
Minneapolis, Minn	15.3	5
St. Louis, Mo	14.5	3
Kansas City, Mo	14.2	*4
Fargo, N. D	16.5	4
Huron, S. D	15.8	5

*Includes 1c city tax.

HUMBLE OIL & REFINING CO.
74 Octane Aviation Gasoline, Clear

	Tank Car
FOB Baytown, Tex	8.5

CONTINENTAL OIL CO.
Conoco Special Gasoline

	Dealer Price	Gasoline Taxes
Denver, Colo	14.5	5
Cheyenne, Wyo	15	5
Helena, Mont	22	6
Salt Lake City, Utah	17.5	5
Albuquerque, N. M	14	*6.5

*Includes city tax of 0.5c.

S. O. CALIFORNIA
Stanavo Aviation Gasoline

	T.W.	
Phoenix, Ariz	17.5	6
Los Angeles, Cal	15	4
San Francisco, Cal	15.5	4
Reno, Nev	17.5	5
Portland, Ore	16	6
Seattle, Wash	16	6
Spokane, Wash	19	6

Note: For discounts, etc., see note under Standard and Flight gasoline above.

Naphtha (In Tank Wagon)

S. O. NEW JERSEY
Posted Tank Wagon Prices

	Mineral Spirits	V.M.&P.
Newark, N. J	11.5	15.5
Baltimore, Md	15.5	....
Washington, D. C	15	....

Discounts: Buyers taking following quantities at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y	10.5	12
*New York City	9.5	10.5
Rochester, N. Y	12	12
Syracuse, N. Y	12	14.5
Boston, Mass	11	11
Bridgeport, Conn	11	11.5
Hartford, Conn	10.5	11
Providence, R. I	11	12

*Prices apply to consumers only in quantities over 1,000 gals. annually. For quantities under 1,000 gals. annually, add 0.5c per gal.

ATLANTIC REFINING CO.

Philadelphia, Pa	11.5	12.5
Lancaster, Pa	13	14
Pittsburgh, Pa	12.5	14.5

Note: Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	12.5	13.5

Note: V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers off t.w. price; 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c: 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.

S. O. INDIANA
(Prices include state and federal taxes)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill	16.2	16.5	15.9
Detroit, Mich	19.2	18.2	19.7
Kansas City, Mo	13.9	14.9	14.4
St. Louis, Mo	14.2	15.2	12.9
Milwaukee, Wis	18.8	19.8	19.3
Minneapolis, Minn	19	20	17.7

Note: All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	10.5	9.5
New York Harbor	10	9
Philadelphia district	10.5	9
Boston	10.5	9.5
Providence	10.5	9.5
†Ohio points, delivered	8.5	*8

*This is on rubber solvent.
†In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.125c less than on V.M.&P.

Price Changes

Dates and amounts of changes. See table for full current prices.

S. O. New Jersey—Kerosine:
Richmond t. w. up 2c, March 14.

Socony-Vacuum Oil—Socony Mobilgas:
Consumer t. c. advanced 0.1c to 0.2c generally, thru territory, May 12, but some points advanced up to 0.4c. Dealer t. w. also up 0.1c to 0.2c, in upstate New York, with Albany, Binghamton, Plattsburg and Syracuse up 0.2c, also Danbury t. w. up 0.2c and Hartford 0.3c.
Details of consumer t. c. advance were: up 0.1c, New York City, Albany, Portland, Boston, Providence and Burlington; up 0.15c, Danbury and New Haven; up 0.2c, Binghamton, Plattsburg, Syracuse, Concord, Lancaster, Manchester, and Rutland; up 0.25c, Jamestown, Hartford and Bangor; up 0.35c, Rochester; and up 0.4c, Buffalo.
T. w. up from 0.1c to 0.2c, thru New England, except Boston metropolitan area, May 15. This advance is not reflected in prices in table, due to lack of details at time this table went to press.

Atlantic Refining—Atlantic White Flash:
Philadelphia and Pittsburgh dealer t. w. up 0.5c, May 6.

S. O. Kentucky—Crown Gasoline:
Birmingham up 2.5c, April 27.
Atlanta up 2c, April 26.
Macon up 2c, April 26.

Kyso Gasoline:
Birmingham up 2c, April 27.
Atlanta up 2c, April 26; cut 0.5c, May 1.
Macon up 2c, April 26.

Kerosine:
Atlanta up 0.5c, April 26.

S. O. Nebraska—Red Crown Gasoline:
Omaha dealer price up 1c, May 10.
Norfolk t. w. cut 1.9c, May 10.

Kerosine:
Norfolk t. w. cut 1.7c, May 10.

S. O. Louisiana—Essolene:
Nashville dealer t. w. up 2c, May 6.

Kerosine:
Pueblo t. w. cut 1.5c, April 1.
Santa Fe t. w. cut 0.5c, May 10.

Fuel Oils

Atlantic Refining—No. 2 Fuel:
Springfield t. w. cut 0.5c, May 1.

Gasoline Prices in 50 Cities

Following data on retail gasoline prices in 50 U. S. cities, as of May 1, 1939, was obtained from sources deemed reliable, but N.P.N. assumes no responsibility for their accuracy:

	Net Dealer Price	Indicated Dir. Margin	Total "Gas" Tax*	Apparent Previg. Posted Retail Price Incl. Tax
	(Figures in cents per gallon)			
Portland, Me.	8.0	3.70	5.0	16.7
Manchester	8.6	3.40	5.0	17.0
Burlington, Vt.	8.0	3.0	5.0	16.0
Boston	7.5	2.8	4.0	14.3
Providence	7.8	3.2	4.0	15.0
Hartford	8.3	3.2	4.0	15.5
Buffalo	6.3	2.0	5.0	13.3
New York	7.8	3.5	5.0	16.3
Newark	7.7	3.5	4.0	15.2
Philadelphia	8.0	1.9	5.0	14.9
Dover, Del.	8.5	2.0	5.0	15.5
Baltimore	8.25	4.05	5.0	17.3
Washington	8.5	4.0	3.0	15.5
Chastn., W. Va.	10.05	4.05	6.0	20.1
Norfolk, Va.	9.25	4.55	6.0	19.8
Charlotte, N. C.	10.65	4.05	7.0	21.7
Chastn., S. C.	8.75	3.75	7.0	19.5
Atlanta	10.5	4.0	7.0	21.5
Jacksonville	8.5	3.0	8.0	19.5
Birmingham	10.0	4.0	8.0**	22.0
Vicksburg	9.0	5.0	7.0	21.0
Memphis	10.0	4.8	8.0	22.8
Lexington, Ky.	10.0	3.0	6.0	19.0
Youngstown, O.	8.0	3.0	5.0	16.0
South Bend	10.6	4.4	5.0	20.0
Chicago	8.1	1.96	4.0	14.06
Detroit	7.6	2.96	4.0	14.56
Milwaukee	8.4	3.3	5.0	16.7
St. Paul-Minneapolis	10.0	4.0	5.0	19.0
Fargo, N. D.	11.2	3.5	4.0	18.7
Huron, S. D.	10.5	4.2	5.0	19.7
Omaha	9.0	3.0	6.0	18.0
Des Moines	9.4	4.3	4.0	17.7
St. Louis	8.7	3.5	4.0*	16.2
Wichita	6.6	3.3	4.0	13.9
Tulsa	7.0	4.0	5.0	16.0
Little Rock	9.25	4.25	7.5	21.0
New Orleans	8.75	3.95	10.0†	22.7
Houston	8.0	4.5	5.0	17.5
Albuquerque	10.0	4.5	6.5‡	21.0
Denver	10.5	4.5	5.0	20.0
Casper, Wyo.	12.0	5.0	5.0	22.0
Butte, Mont.	13.5	4.5	6.0	24.0
Boise, Ida.	14.0	4.0	6.1	24.1
Salt Lake City	12.0	4.5	5.0	21.5
Reno, Nev.	12.5	4.0	5.0	21.5
Phoenix, Ariz.	12.5	4.0	6.0	22.5
San Francisco	10.5	4.0	4.0	18.5
Portland, Oreg.	11.0	4.0	6.0	21.0
Spokane, Wash.	13.0	4.0	6.0	23.0
Avg. 50 Cities	9.45	3.71	5.44	18.6

*Including 1c federal tax. **Includes 1c city tax. †Includes 2c city tax. ‡Includes 0.5c city tax.

Coming Meetings

National Assn. of Purchasing Agents (Oil Company Buyers' Group), annual meeting, Fairmont Hotel, San Francisco, Calif., May 21 to 25.

World Automotive Engineering Congress, sponsored by S.A.E. for New York, Hotel Pennsylvania, May 22-28; Indianapolis, May 29, 30; Detroit, Hotel Statler, May 31-June 2; San Francisco, Hotel Fairmont, June 6-8.

Illinois-Indiana Petroleum Assn., annual meeting, Robinson, Ill., June 3.

Fire and Safety Marshals of National Petroleum Assn., 14th annual meeting, Hotel Schenley, Pittsburgh, June 6 and 7.

National Assn. of Credit Men, 44th annual congress, Grand Rapids, Mich., June 11 to 15.

Oil Trades Assn. of New York, sports day, Pelham Country Club, Pelham, N. Y., June 13.

Cincinnati Oil Club, annual picnic, Miami Boat Club, Miamiville, O., June 16.

Pennsylvania Grade Crude Oil Assn., annual meeting, Pittsburgh, Pa., June 15, 16.

13th International Congress of Carbide, Acetylene, Oxy-Acetylene Welding & Allied Industries, Munich, Germany, June 25 to July 1.

American Society for Testing Materials, 42nd annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26 to 30.

American Institute of Mining & Metallurgical Engineers, regional meeting, San Francisco, July 10 to 17.

The Eastern United States Michigan Oil & Gas Exposition, Mt. Pleasant, Mich., Aug. 1 to 6.

American Society of Mechanical Engineers, Hotel Pennsylvania, and Engineering Societies Bldg., 29 West 39th St., New York, Sept. 4 to 8.

Oil Workers International Union, Hammond, Ind., Sept. 5.

American Chemical Society, Detroit, Sept. 9 to 13.

Montana National Bituminous Conference, Sun Valley, Idaho, Sept. 11 to 14.

National Petroleum Assn., 37th annual meeting, Hotel Traymore, Atlantic City, N. J., Sept. 13, 14, 15.

Oil Trades Assn. of New York, sports day, Pelham Country Club, Pelham, N. Y., Sept. 19.

New Jersey Oil Trades Assn., fall outing, Sept. 28.

National Lubricating Grease Institute, Stevens Hotel, Chicago, Oct. 2, 3.

American Gas Assn., annual convention, New York, Oct. 9, 10.

Independent Petroleum Assn. of America, 10th annual meeting, Ft. Worth, Tex., Oct. 18-20.

National Tax Conference, Palace Hotel, San Francisco, week of Oct. 16.

40th Annual National Automobile Show, Grand Central Palace, New York, week of Oct. 15.

National Safety Congress and Exposition, Chalfonte-Haddon Hall, Atlantic City, N. J., Oct. 16 to 20.

National Motor Truck Show, Navy Pier, Chicago, Nov. 8-16.

American Petroleum Institute, 20th annual meeting, Stevens Hotel, Chicago, Nov. 13-17.

Oil Trades Assn. of New York, annual banquet, Waldorf-Astoria Hotel, New York, Nov. 14.

American Institute of Chemical Engineers, 32nd annual meeting, Providence-Biltmore Hotel, Providence, R. I., Nov. 15, 16, 17.

American Society of Mechanical Engineers, Philadelphia, Pa., Dec. 4 to 7.

17th Exposition of Chemical Industries, Grand Central Palace, New York, Dec. 4 to 9.

Twin Cities Oil Men To Hold Golf Tournament

MINNEAPOLIS, May 15.—The annual round of golf parties, when oil men forget the cares of business, take their clubs out for the afternoon then have dinner and award prizes, gets under way with the announcement today that the annual petroleum industry golf tournament by oil men in the Twin Cities will be held June 6 at the Westwood Hills Golf Club, Minneapolis.

TANK WAGON MARKETS, HEATING OILS

Prices in Effect May 15, 1939

Following are posted tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

	No. 1	No. 2	No. 4
S. O. NEW JERSEY			
Atlantic City, N. J.	7.0	5.75	5.75
Newark	7.0	5.75	5.75
Annapolis, Md	....	6.5	....
Baltimore	6.75	6.25	5.75
Washington, D. C.	7.00	6.50	6.50
Norfolk, Va.	7.0	6.0	6.0
Petersburg	7.25	6.25	....
Richmond	7.25	6.25	6.25
Charlotte, N. C.	8.75	7.75	....
Hickory	....	8.25	....
Raleigh	8.75	7.25	....
Charleston, S. C.	8.5	7.0	....
Columbia	9.5	8.0	....
Spartanburg	10.2	8.7	....
SOCONY-VACUUM OIL CO. INC. (S. O. New York Division)	No. 2	No. 3	No. 4
New York City	5.75	5.75	5.75
Albany, N. Y.	5.75	5.75	5.25
Rochester, N. Y.	6.75	6.75	6.75
Boston, Mass.	5.50	5.50	5.50
Bangor, Me.	6.00	6.00	6.00
Manchester, N. H.	6.00	6.00	6.00
Burlington, Vt.	6.25	6.25	6.25
Hartford, Conn.	6.00	6.00	6.00
New Haven, Conn.	5.50	5.50	5.50
Providence, R. I.	5.50	5.50	5.50

Note: Prices for No. 1 fuel in Socony-Vacuum territory same as for kerosine which see in tank wagon table for various cities; prices change with kerosine.

ATLANTIC REFINING

	Numbers 1	2	3	4	5	6
Phila., Pa.	7.75	6.0	6.0	6.0	3.25	2.50
Allentown, Pa.	8.5	6.5	6.5	6.5	....	....
Wilmington, Del.	7.75	5.5	5.5	5.5	....	....
Springfield, Mass.	7.0	5.5	....	....	....	....
Worcester, Mass.	7.0	5.50	....	5.50	....	....
Hartford, Conn.	6.5	6.0	....	6.0	....	....

S. O. OHIO	No. 1	No. 2	No. 3
Columbus Division and Cleveland	7.50	7.50	7.00
City of Lima	8.00	8.00	7.00
Rest of Ohio	8.00	8.00	7.50

Note: S. O. Ohio prices are for full compartment hose dumps, bucket dumps are 0.5c per gallon higher.

S. O. INDIANA
Stanolex Fuel and Furnace Oils

	No. 1 Fuel	Stanolex Furnace
Chicago	(a)6.75	6.75
Indianapolis	....	(b)7.8
Detroit	....	7.1
Milwaukee	8.4	7.7
Minneapolis	7.8	7.8
St. Louis	7.7	(c)6.7
Kansas City	6.8	6.8

(a) For 400 gals. and over; 150 to 399 gals., 7.25c; 1 to 149 gals., 8.25c.
(b) Excluding 4c state tax.
(c) For 400 gals. & over; 100 to 399 gals., 7c; 1 to 99 gals., 8c.
Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations.

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline-Kerosine Cents per Cwt.	Gasoline-Kerosine Cents per gal. 6.6 lbs.	Distillate-Gas Oil-Fuel Oil Cents per Cwt.	Distillate-Gas Oil-Fuel Oil Cents per gal. 7.4 lbs.
Chicago, Ill.	40	2.640	32	2.368
Decatur, Ill.	39	2.574	31	2.294
Joliet, Ill.	40	2.640	32	2.368
Peoria, Ill.	39	2.574	31	2.294
Quincy, Ill.	36	2.376	29	2.146
Indianapolis, Ind.	48	3.168	39	2.886
Evansville, Ind.	46	3.036	37	2.738
South Bend, Ind.	53	3.498	42	3.108
Detroit, Mich.	64	4.224	51	3.774
Gd. Rapids, Mich.	62	4.092	50	3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	51	3.366	41	3.034
Milwaukee, Wis.	43	2.838	34.5	2.553
LaCrosse, Wis.	46	3.036	37	2.738
Min'ap'ls-St. Paul	46	3.036	37	2.738
Duluth, Minn.	52	3.432	41.5	3.071
Mankato, Minn.	46	3.036	37	2.738
Des Moines, Ia.	36	2.376	29	2.146
Davenport, Ia.	39	2.574	31	2.294
Mason City, Ia.	42	2.772	33.5	2.479
St. Louis, Mo.	33	2.178	26.5	1.961
Kansas City, Mo.	28	1.848	22.5	1.665
St. Joseph, Mo.	28	1.848	22.5	1.665
Fargo, N. D.	63	4.158	50.5	3.737
Minot, N. D.	83	5.478	66.5	4.921
Huron, S. D.	53	3.498	42.5	3.145
From Ponca City	13	*0.858	13	†0.858
Wichita				
From Tulsa	21	*1.386	21	†1.386
From Cushing	19	*1.254	19	†1.254

*This rate also includes distillate rate at 6.6 lbs. per gal.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

Prices Effective	May 15	
District:	60-64 Oct.	65 Oct. & Above
N. Y. harbor	6.00 – 6.25	6.00 – 6.25
(a)N. Y. harbor	5.75 – 6.00	5.75 – 6.00
Philadelphia	6.00 – 6.25	6.00 – 6.25
Baltimore	6.00 – 6.25	6.00 – 6.25
Norfolk	6.25 – 6.50	6.25 – 6.50
Wilmington, N. C.	6.00 – 6.50	6.25 – 6.50
Charleston, S. C.	6.00 – 6.50	6.25 – 6.50
Savannah	6.00 – 6.50	6.00 – 6.50
Jacksonville	6.00 – 6.50	6.00 – 6.50
Portland	6.25 – 6.50	6.50 – 7.00
Boston	5.75 – 6.00	6.00 – 6.50
Providence	5.75 – 6.00	6.00 – 6.50

WATER WHITE KEROSINE

District:			
N. Y. harbor	4.375–4.50	Charleston	5.00 –5.25
(a)N. Y. harbor	4.25 –4.375	Savannah	5.00 –5.25
Philadelphia	4.50 –5.00	Jacksonville	5.00 –5.25
Baltimore	4.75 –5.00	Portland	4.375
Norfolk	4.75 –5.00	Boston	4.375
Wilmington, N. C.	5.00 –5.75	Providence	4.375

(b) FUEL OILS

	N. Y. harb.	N. Y. harb. barges
No. 1	4.375– 4.50	4.25 – 4.375
Nos. 2-3	3.875– 4.00	3.75
No. 4	3.625– 4.00	3.50 – 3.75
No. 5	(m)$1.15	.....
No. 6	$0.95 –$1.05	.....

	Phila. dist.	Balt. dist.
No. 1	4.75 – 5.00	4.75 – 5.00
Nos. 2-3	4.25	4.25
No. 4	4.00 – 4.25	4.00 – 4.25
No. 5	$1.15	$1.15
No. 6	$0.95	$0.95

	Bost. dist.	Prov. dist.
No. 1	4.375	4.375
Nos. 2-3	3.875	3.875
No. 4	3.75 – 4.00	3.75 – 4.00
No. 5	$1.25	$1.15
No. 6	$0.95 –$1.05	$0.95

District:	(c)Bunker C Fuel	(c) Diesel Oil
N. Y. harbor	$0.95 –$1.05	$1.65
Philadelphia	$0.95	$1.65
Baltimore	$0.95	$1.65
Norfolk	$0.95	$1.65
Charleston	$0.90	$1.65
Savannah	$0.90	$1.785
Jacksonville	$0.90	$1.785
Tampa	$0.85	$1.785
Portland	$1.05	$1.75
Boston	$0.95 –$1.05	$1.65
Providence	$0.95	$1.65

	Gas Oil 28-34 Gravity	Diesel Oil Shore Plants
N. Y. harbor	3.875– 4.125	3.75 – 4.00
Philadelphia dist	4.25	....
Baltimore dist	4.25	....
Norfolk dist	4.25	....
Savannah dist	....	4.25
Jacksonville dist	....	4.25

Pacific Export

(c) (Quotations are at seaboard, Los Angeles, in cargo lots, cents per gal., except where otherwise noted.)

Prices Effective	May 15	May 8
U. S. Motor, under 65 oct.	4.00 – 4.125	4.00 – 4.125
400 e.p. blend, under 65 oct.	4.125– 4.25	4.125– 4.25
400 e.p. blend 65 oct. & above	4.25 – 4.50	4.25 – 4.50
(d) 38-40 gravity, w.w. kerosine	4.25 – 4.50	4.25 – 4.50
41-43 gravity, w.w. kerosine	4.50 – 4.75	4.50 – 4.75
44 gravity, w.w. kerosine	5.00 – 5.25	5.00 – 5.25
In Cargo lots, per bbl.		
Diesel fuel, 24° & above	$0.95 –$1.05	$0.95 –$1.05
Diesel fuel, under 24°	$0.85 –$0.90	$0.85 –$0.90
(f) 30-34 gravity, diesel (gas oil)	$1.05 –$1.20	$1.05 –$1.20
(g) Grade C fuel oil	$0.58 –$0.65	$0.58 –$0.65

Prices Effective	May 15	May 8
In Ships' Bunkers, or deep tank lots, per bbl.:		
(f) Diesel fuel oil	$1.35 –$1.45	$1.35 –$1.45
(g) Grade C fuel oil	$0.70 –$0.90	$0.70 –$0.90
Cased Goods: (Per case)		
U. S. Motor	$1.35 –$1.45	$1.35 –$1.45
400 e.p. blend, under 65 octane	$1.40 –$1.50	$1.50 –$1.60
375-400 e.p. blend, 65 oct. & above	$1.50 –$1.60	$1.60 –$1.70
(d)40-43 gravity, w.w. kerosine	$1.30 –$1.40	$1.30 –$1.40
Kerosine, p.w.	$1.25 –$1.35	$1.25 –$1.35

New York Export

(Cents per gal. in bbls. FAS. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:		
Light, 25 p.t.	22.75	22.75
Neutral oil:		
200 3 color, 25 p.t.	24.00	24.00
150 3 color, 25 p.t.	22.00	22.00
600 s.r., unfiltered	15.50	15.50
650 s.r., unfiltered	17.50	17.50
600 fl., s.r.	18.00	18.00
630 fl., s.r.	20.50	20.50

Wax, Domestic *and* Export

(A.S.T.M. Tests. Melting points, however, are A.M.P., 3 higher than E.M.P. Export prices, FAS., carloads. Domestic prices, FOB. refineries, in bags, carloads, with 0.2c discount allowed for shipment in bulk, except where noted below. Scale solid; fully refined, slabs in bags)

Prices Effective	May 15	
	New York	
	Domestic	Export
124-6 Y.C. scale	2.75 – 2.85	2.75 – 2.85
122-4 W.C. scale	2.85 – 3.00	2.85 – 3.00
124-6 W.C. scale	2.85 – 3.00	2.85 – 3.00
123-5 Fully rfd.	4.00	3.625
125-7 Fully rfd.	4.15	3.75
128-30 Fully rfd.	(h) 4.25	4.00
130-2 Fully rfd.	(h) 4.60	4.25
133-5 Fully rfd.	(h) 4.90	4.65
135-7 Fully rfd.	(h) 5.15	5.00
	New Orleans	
	Domestic	Export
124-6 Y.C. scale	2.75 – 2.85	2.75 – 2.85
122-4 W.C. scale	2.85 – 3.00	2.85 – 3.00
124-6 W.C. scale	2.85 – 3.00	2.85 – 3.00
123-5 Fully rfd.	4.00	3.625
125-7 Fully rfd.	4.15	3.75
128-30 Fully rfd.	(h) 4.25	4.00
130-2 Fully rfd.	(h) 4.60	4.25
133-5 Fully rfd.	(h) 4.90	4.65

Gulf Coast

For note on combining export and domestic listings, see National Petroleum News of May 10, page 48.

(FOB. ship at Gulf for domestic and export shipment; minimum 20,000 bbls.; representing traders' opinions)

MOTOR GASOLINE

	May 15		
	60-62 Gravity, 400 e.p.	61-63 Gravity, 390 e.p.	64-66 Gravity, 375 e.p.
60 octane	4.375– 4.50	4.375– 4.50	4.375– 4.50
61 octane	4.375– 4.50	4.375– 4.50	4.375– 4.50
62 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
63 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
64 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
65 octane	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
66 octane	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
67 octane	4.875– 5.125	4.875– 5.125	4.875– 5.125
68 octane	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25
70 octane	5.125– 5.50	5.125– 5.50	5.125– 5.50

Prices Effective	May 15	May 8
KEROSINE		
44 gravity, w.w.	3.75 – 4.00	3.75 – 4.00
41-43 gravity, w.w.	3.50 – 3.75	3.50 – 3.75
41-43 gravity, p.w.	3.50 – 3.75	3.50 – 3.75

Prices Effective	May 15	May 8
GAS AND BUNKER OILS		
Gas Oil (i):		
Below 43 diesel index	3.00 – 3.125	3.00 – 3.375
43-47 diesel index	3.125– 3.25	3.125– 3.50
48-52 diesel index	3.25 – 3.375	3.25 – 3.625
53-57 diesel index	3.375– 3.50	3.375– 3.75
58 & above	3.50 – 3.625	3.50 – 3.875
LIGHT FUEL OILS		
No. 1	3.50 – 3.75	3.50 – 3.75
No. 2	3.00 – 3.375	3.00 – 3.375
DIESEL and BUNKER OILS		
(c) Diesel Oil	(c)$1.45	(c)$1.45
(c) Grade C bunker oil	(c) $0.75–$0.85	(c)$0.75–$0.85
Grade C bunker oil, in cargoes	$0.75	$0.75

MID-CONTINENT LUBRICATING OILS

(Cents per gal. at Gulf; in bbls., FAS.; in bulk, FOB. terminals)

	May 15	
	(j) Barrels	Bulk
190-200 vis. D. 210 brt. stock	22.00	17.80
150-160 vis. D 210 brt. stock:		
0-10 p.p.	18.50 –19.00	14.25 –14.30
10-25 p.p.	18.00 –18.50	13.75 –13.80
150-160 vis. E. 210 brt. stock	18.00	13.80
120 vis. D 210 brt. stock	17.25 –17.50	13.00 –14.50

	May 15 Bulk	May 8 Bulk
180 vis. No. 3 color neutral:		
0-10 p.p.	10.05 –11.50	10.05 –11.50
15-30 p.p.	9.55 –11.00	9.55 –11.00
200 vis. No. 3 color neutral:		
0-10 p.p.	10.80 –12.00	10.80 –12.00
15-30 p.p.	10.30 –11.50	10.30 –11.50
600 s.r. olive green	9.00 –11.25	9.00 –11.25
600 s.r. dark green	7.00 – 9.25	7.00 – 9.25

SOUTH TEXAS LUBRICATING OILS

(Vis. at 100° cold test 0, bulk export shipment, FOB terminals.)

Unfiltered Pale Oils:

Vis. Color		
100 No. 3	4.50 – 4.75	4.50 – 4.75
200 No. 3	6.00 – 6.25	6.00 – 6.25
300 No. 3	6.50 – 6.75	6.50 – 6.75
500 No. 3½	7.50	7.50
750 No. 4	8.00 – 8.25	8.00 – 8.25
1200 No. 4	8.375– 8.75	8.375– 8.75
2000 No. 4	8.50 – 9.00	8.50 – 9.00

Red Oils:

Vis. Color		
100 No. 5-6	4.50 – 4.75	4.50 – 4.75
200 No. 5-6	6.00 – 6.25	6.00 – 6.25
300 No. 5-6	6.50 – 6.75	6.50 – 6.75
500 No. 5-6	7.50	7.50
750 No. 5-6	8.00 – 8.25	8.00 – 8.25
1200 No. 5-6	8.375– 8.75	8.375– 8.75
2000 No. 5-6	8.50 – 9.00	8.50 – 9.00

Note: Red oil prices cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate freight rates to Continental ports shillings per ton of 2240 lbs., British sterling: U. S. ports cents per bbl.)

Rates Effective May 15

	Crude &/or Fuel		Refined Oil &/or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont.(k)	12/	12/-12/6	11/-11/9	12/
Aruba-U.K./Cont.(k)	10/	10-10/9	10/6	10/3-10/9
Gulf-N. Atlantic(l) (not E. of N.Y.): Hvy. Crude & fuel, (10 to 19.9 gravity)	25c	24c	....	....
Light Crude, (30 Grav.or Lighter)	27c	22c	....	....
Gasoline	....	....	25c	23-24c
Kerosine	....	....	26c	24-25c
Light Fuel	....	....	27c	25-26c

(a) In barge lots. (b) Fuel oils meet specifications of U. S. Commercial standards CS12-35. (c) Ships' bunkers. Lighterage, additional at some points, not included. (d) 150 fire point. (e) For San Francisco cargo prices, add 5c per bbl. to cargo prices shown above. (f) Pacific Specification 200. (g) Pacific Specification 400. (h) Shipment in bags or in bulk. (i) Less than ½ of 1% sulfur. (j) Second-hand barrels. (k) Continental ports in range between Bordeaux and Hamburg, both inclusive. (l) Venezuela loading, same rate; Tampico, 2c to 3c per bbl. additional. (m) Low pour test, low viscosity, No. 5 generally quoted at $1.25.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN FIELDS

Posted by Joseph Seep Purchasing Agency
(Effective March 6, 1939, except Corning Jan. 24, 1939)

Penna. Grade Oil in Southwest Penna. Pipe Lines $1.65
Penna. Grade Oil in Eureka Pipe Lines (West Virginia) $1.59
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.) $1.55
Corning Oil in Buckeye Pipe Lines (Ohio) .. $1.02

Posted by Other Companies

Tide Water Associated Oil Co.
Bradford-Allegany district (Penna. and N. Y.) (Effective March 6, 1939) $2.00
*The Pennzoil Co.: (Effective March 6, 1939)
Penna. Grade Oil in National Transit Lines *1 93
*The Pennzoil Co. posts $1.93 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields, prices in other lower districts range down to $1.88 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co.
Midland, Midland County (April 17, 1939) ... $0.975

Posted by Simrall Corp.
(Effective April 20, 1939)
Crystal, Greendale, Porter and Wise $0.975
Beaverton, Buckeye, Bentley, Edenville $0.95
Freeman $0.89
(Effective April 18, 1939)
West Branch, Arenac, and equal grades $0.74

Posted by Bay Pipe Line Corp.
(Effective April 20, 1939)
Bentley and Buckeye $0.95
Saginaw and Wise $0.975

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.
(Effective Oct. 13, 1938)
Illinois and Princeton $1.05
Illinois Basin $1.15

Posted by Sohio Corp.
Illinois Basin:
Beecher City (Effective Oct. 13, 1938) $1.15
Centralia Field:
Congested District (Effective Oct. 1, 1938) . $1.15
Area Outside Congested District (Effective Oct. 13, 1938) $1.15

Posted by Carter Oil Co.
(Effective Oct. 14, 1938)
Louden, Fayette County, Ill. $1.15

Posted by Ashland Oil & Transportation Co.
(Effective Oct. 14, 1938)
Somerset Oil in Ashland Lines, Kentucky:
Big Sandy River $1.12
Kentucky River $1.20

Posted by Stoll Oil Refining Co.
(Effective Nov. 10, 1938)
Stoll Pipe Line Oil (Ky.) $1.00

Posted by Fordsville Gathering Line, Inc.
(Effective April 12, 1939)
Birk City Field, Ky. $1.00
(Effective Oct. 13, 1938)
Owensboro District, Ky. $1.10

CANADIAN FIELDS

Posted by Imperial Oil Limited
Western Ontario
(Effective Oct. 25, 1938)
Petrolia $1.90
Oil Springs $1.97

Alberta—Turner Valley
(Prices f.o.b. field tankage)
(Effective Jan. 5, 1938)

Crude Oil			
40-40.9°	$1.14	53-53.9	$1.40
41-41.9	1.16	54-54.9	1.42
42-42.9	1.18	55-55.9	1.44
43-43.9	1.20	56-56.9	1.46
44-44.9	1.22	57-57.9	1.48
45-45.9	1.24	58-58.9	1.50
46-46.9	1.26	59-59.9	1.52
47-47.9	1.28	60-60.9	1.54
48-48.9	1.30	61-61.9	1.56
49-49.9	1.32	62-62.9	1.58
50-50.9	1.34	63-63.9	1.60
51-51.9	1.36	64-64.9	1.62
52-52.9	1.38		

Crude Naphtha, 65 grav. & above $2.14

Absorption Gasoline	
90% Rec., 20 lb. Reid v.p.	$1.94
90% Rec., 17 lb. Reid v.p.	$2.08

MID-CONTINENT

Oklahoma-Kansas

*(Effective Oct. 11 to 22, 1938; and Feb. 16, 1939)

	S. O. Indiana	Carter Magnolia Shell	Continental Texas Co.	Sinclair-Prairie
Below 21°	$0.70	$0.60	....	....
21-21.9	.72	.63	....	....
22-22.9	.74	.66	....	....
23-23.9	.76	.69	....	....
24-24.9	.78	.72	....	....
25-25.9	.80	.75	....	$0.58
26-26.9	.82	.78	....	.63
27-27.9	.84	.81	....	.68
28-28.9	.86	.84	$0.86	.73
29-29.9	.88	.87	.88	.78
30-30.9	.90	.90	.90	.82
31-31.9	.92	.92	.92	.86
32-32.9	.94	.94	.94	.90
33-33.9	.96	.96	.96	.96
34-34.9	.98	.98	.98	.98
35-35.9	1.00	1.00	1.00	1.00
36-36.9	1.02	1.02	1.02	1.02
37-37.9	1.04	1.04	1.04	1.04
38-38.9	1.06	1.06	1.06	1.06
39-39.9	1.08	1.08	1.08	1.08
40 & above	1.10	1.10	1.10	1.10

*Effective by Carter Oil, Oct. 13, posting in Okla. only; Continental Oil, Oct. 11, with lowest grade below 29; Magnolia, Oct. 12, posting in Okla. only; Shell, Oct. 22; Sinclair-Prairie, Feb. 16, 1939; S. O. Indiana, Oct. 17; The Texas Co., Oct. 12.

North-North Central and Central Texas

Effective 1938:	Stanolind Oct. 17	†Sinclair-Prairie Oct. 11	*Texas Co. *Continental *Magnolia
Below 21°..	$0.60	....	....
21-21.9	.62	....	....
22-22.9	.64	....	....
23-23.9	.66	....	....
24-24.9	.68	$0.76	$0.79
25-25.9	.70	for	for
26-26.9	.72	oil	oil
27-27.9	.74	below	below
28-28.9	.76	29°.	29°.
29-29.9	.78	.78	.81
30-30.9	.80	.80	.83
31-31.9	.82	.82	.85
32-32.9	.84	.84	.87
33-33.9	.86	.86	.89
34-34.9	.88	.88	.91
35-35.9	.90	.90	.93
36-36.9	.92	.92	.95
37-37.9	.94	.94	.97
38-38.9	.96	.96	.99
39-39.9	.98	.98	1.01
40 & above.	1.00	1.00	1.03

*Effective Oct. 11, by Continental, in North Tex.; Oct. 12, by Texas Co. in North & North Central Texas. Texas Co.'s lowest grade is 28-28.9, at $0.79; by Magnolia, Dec. 3, in N. and N. Central Texas.
†Sinclair-Prairie prices are in N. Cent. Texas and Mexia.

Jefferson County, Texas

Posted by Magnolia Petroleum Co.

Beaumont
(Effective Oct. 12, 1938)

Below 20°	$0.79	30-30.9	$1.08
20-20.9	.82	31-31.9	1.10
21-21.9	.85	32-32.9	1.12
22-22.9	.88	33-33.9	1.14
23-23.9	.91	34-34.9	1.16
24-24.9	.94	35-35.9	1.18
25-25.9	.97	36-36.9	1.20
26-26.9	1.00	37-37.9	1.22
27-27.9	1.02	38-38.9	1.24
28-28.9	1.04	39-39.9	1.26
29-29.9	1.06	40 & above	1.28

*For below 21°.

Oct. 11, '38, Stanolind Oil & Gas Co. posted same gravity and price schedule in West Beaumont field as Magnolia.

TEXAS FIELDS

Posted by Humble Oil & Refining Co.

**West Central Texas*
(Effective Dec. 3, 1938)

24-24.9	$0.71	33-33.9	$0.89
25-25.9	.73	34-34.9	.91
26-26.9	.75	35-35.9	.93
27-27.9	.77	36-36.9	.95
28-28.9	.79	37-37.9	.97
29-29.9	.81	38-38.9	.99
30-30.9	.83	39-39.9	1.01
31-31.9	.85	40 & above	1.03
32-32.9	.87		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young Counties.
Note: Effective Oct. 1, 1937, Humble prices are based on 100% tank tables at 60F.

**East Central Texas*
(Effective Oct. 11, 1938)

23-23.9	$0.78	32-32.9	$0.96
24-24.9	.80	33-33.9	.98
25-25.9	.82	34-34.9	1.00
26-26.9	.84	35-35.9	1.02
27-27.9	.86	36-36.9	1.04
28-28.9	.88	37-37.9	1.06
29-29.9	.90	38-38.9	1.08
30-30.9	.92	39-39.9	1.10
31-31.9	.94	40 and above	1.12

Posted by Pan American Pipe Line Co.
(Effective Feb. 15, 1939)
Cayuga, Anderson county $0.68
*Including Anderson, Cherokee, Limestone, Navarro counties.

PANHANDLE TEXAS

Posted by Humble Oil & Refining Co.
(Effective Dec. 3, 1938)

	Gray County	Carson-Hutchinson
28-28.9	$0.72	$0.67
29-29.9	.74	.69
30-30.9	.76	.71
31-31.9	.78	.73
32-32.9	.80	.75
33-33.9	.82	.77
34-34.9	.84	.79
35-35.9	.86	.81
36-36.9	.88	.83
37-37.9	.90	.85
38-38.9	.92	.87
39-39.9	.94	.89
40 & above	.96	.91

Effective Oct. 11, 1938, Sinclair Prairie posted same prices in Panhandle Texas as Humble posted Dec. 3. Dec. 3, Magnolia met Humble.

EAST TEXAS

Gulf, Humble, Magnolia, Sinclair Prairie, Stanolind, Texas Co., Tide-Water Associated $1.10
*Effective Oct. 11 by Humble, Sinclair Prairie, and Stanolind; Oct. 12 Magnolia, Texas, Tide Water; Oct. 13 by Gulf.

NORTHEAST TEXAS

(Posted by Humble, Oct. 11, 1938)
Talco $0.55

(Posted by Magnolia, Oct. 12, 1938)
Cass County and Panola County, Tex.:
Same gravity and price schedule as S. O. Louisiana posts for N. La.-Ark. Crude, which see under that company.

(Posted by The Texas Co., Oct. 12, 1938)
Cass County $1.05

WEST TEXAS and NEW MEXICO

(a) (Effective Oct. 11, 1938 to March 24, 1939)

	Humble	Magnolia Stanolind	Shell	Texas Co. Sinclair
Below 20°	$0.53	(b)	$0.53	(c)
20-20.9	.55	....	.55	....
21-21.9	.57	....	.57	....
22-22.9	.59	....	.59	....
23-23.9	.61	....	.61	....
24-24.9	.63	....	.63	....
25-25.9	.65	....	.65	.65
26-26.9	.67	.67	.67	.67
27-27.9	.69	.69	.69	.69
28-28.9	.71	.71	.71	.71
29-29.9	.73	.73	.73	.73
30-30.9	.75	.75	.75	.75
31-31.9	.77	.77	.77	.77
32-32.9	.79	.79	.79	.79
33-33.9	.81	.81	.81	.81
34-34.9	.83	.83	.83	.83
35-35.9	.85	.85	.85	.85
36-36.9	.87	.87	.87	.87
37-37.9	.89	.89	for	for
38-38.9	.91	.91	oil	oil
39-39.9	.93	.93	36° &	36° &
40 & above	.95	.95	above.	above.

Pecos County, West Texas
(Posted by Humble and Shell, Oct. 11, 1938)
Pecos $0.78
Yates Shallow Pool (Shell) ..... .65
(a) Effective by Humble Oil & Refg., Shell Oil, Stanolind Oil & Gas, and Sinclair Prairie, Oct. 11, 1938; by Magnolia Petroleum and The Texas Co., Oct. 12, 1938. On March 24, 1939, Sinclair Prairie revised its posting from 40 & above, to 36 & above, at $0.87.
(b) Magnolia posts $0.63 for below 25; $0.65 for 25-25.9. Stanolind posts $0.65 for below 26.
(c) Texas Co. posts $0.65 for below 26; Sinclair Prairie, $0.63 for below 25.
Note: Humble's postings are in these counties: Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler and Yoakum, West Texas; and Lea county, N. Mex.; Magnolia's are in Crane, Glasscock, Howard, Mitchell, Upton and Winkler; Shell, in Crane, Ector, Glasscock, Howard, Upton, Winkler, Lea; Stanolind in Hendrick field, Winkler county; Texas Co. in Ward, Winkler and Lea; Sinclair in W. Texas and Lea.

Posted by Sinclair Prairie Oil Marketing Co.
(Effective Oct. 11, 1938)
Eddy county, N. Mex. $0.77

Posted by Continental Oil Co.
(Effective Oct. 11, 1938)
Artesia, Jackson and Maljamar pools, New Mexico: gravity schedule beginning with below 29, at $0.61; 29-29.9, at $0.63; plus 2c differential for each gravity, up to 40 & above, at $0.85.

COLORADO

Posted by Continental Oil Co.
(Effective Oct. 11, 1938)
Ft. Collins and Wellington

Below 29	$0.81	35-35.9	$0.95
29-29.9	.83	36-36.9	.97
30-30.9	.85	37-37.9	.99
31-31.9	.87	38-38.9	1.01
32-32.9	.89	39-39.9	1.03
33-33.9	.91	40 & above	1.05
34-34.9	.93		

Canon City and Florence, Col. $0.90

SOUTH AND SOUTHWEST TEXAS

All Shown Below Posted by Humble Oil & Refining Co.
(Effective Oct. 11, 1938)
Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoboroski crudes $0.96
Van crude $0.93
Conroe $1.27
(Effective Dec. 3, 1938)
Flour Bluff $1.23
Oct. 12, '38, Magnolia met Humble in Darst Creek; posted $0.87 in Luling; $0.99 in Lytton Springs; $1.14 for Cleveland, and $1.02 in Hardin, both in Liberty county, Tex.
Oct. 12, '38, The Texas Co. met Humble in Darst Creek.

**Anahuac and Dickinson*
(Effective Dec. 3, 1938)

Below 20°	$0.74	30-30.9	$1.03
20-20.9	.77	31-31.9	1.05
21-21.9	.80	32-32.9	1.07
22-22.9	.83	33-33.9	1.09
23-23.9	.86	34-34.9	1.11
24-24.9	.89	35-35.9	1.13
25-25.9	.92	36-36.9	1.15
26-26.9	.95	37-37.9	1.17
27-27.9	.97	38-38.9	1.19
28-28.9	.99	39-39.9	1.21
29-29.9	1.01	40 & above	1.23

*Includes Cedar Point, Fairbanks, Gillock, Hull, Pierce Junction and Raccoon Bend (shallow sand). *Raccoon Bend (Deep sand crude) Tomball and Satsuma*
(Effective Dec. 3, 1938)

22-22.9	$0.95	27-27.9	$1.05
23-23.9	.97	28-28.9	1.07
24-24.9	.99	29-29.9	1.09
25-25.9	1.01	30-30.9	1.11
26-26.9	1.03	31-31.9	1.13

(Continued on next page)

CRUDE OIL MARKETS

(Continued from preceding page)

32-32.9	$1.15	37-37.9	$1.25
33-33.9	1.17	38-38.9	1.27
34-34.9	1.19	39-39.9	1.29
35-35.9	1.21	40 & above	1.31
36-36.9	1.23		

Dec. 3, Magnolia met above price and gravity schedule in Tomball.

Posted by Humble

**Mirando*

(Effective Dec. 3, 1938)

Below 20°	$0.74	30-30.9	$1.03
20-20.9	.77	31-31.9	1.05
21-21.9	.80	32-32.9	1.07
22-22.9	.83	33-33.9	1.09
23-23.9	.86	34-34.9	1.11
24-24.9	.89	35-35.9	1.13
25-25.9	.92	36-36.9	1.15
26-26.9	.95	37-37.9	1.17
27-27.9	.97	38-38.9	1.19
28-28.9	.99	39-39.9	1.21
29-29.9	1.01	40 & above	1.23

*Includes Duval, Jim Hogg, Jim Wells, Webb and Zapata counties, Tex. and Heyser and Placedo crudes.

Oct. 12, '38, Texas Co. posted for Duval-Mirando, $0.77 for below 21, plus 3c differential to 26-26.9, $0.95; 27-27.9, $0.97; 28 & above, $0.99.

Dec. 3, Humble's Mirando schedule met by Magnolia.

LOUISIANA-ARKANSAS

Posted by Standard Oil Co. of Louisiana

(Effective Oct. 5, 1938)

	*N. La.-Ark.	†Columbia County, Ark.	‡South Louisiana
Below 21°	$0.73	$0.66	$0.74
21-21.9	for	for	.77
22-22.9	oil	oil	.80
23-23.9	Below	Below	.83
24-24.9	25°	25°	.86
25-25.9	$0.75	$0.68	.89
26-26.9	.77	.70	.92
27-27.9	.79	.72	.94
28-28.9	.81	.74	.96
29-29.9	.83	.76	.98
30-30.9	.85	.78	1.00
31-31.9	.87	.80	1.02
32-32.9	.89	.82	1.04
33-33.9	.91	.84	1.06
34-34.9	.93	.86	1.08
35-35.9	.95	.88	1.10
36-36.9	.97	.90	1.12
37-37.9	.99	.92	1.14
38-38.9	1.01	.94	1.16
39-39.9	1.03	.96	1.18
40 & above	1.05	.98	1.20

(Effective Oct. 5, 1938)

Smackover, Ark. $0.73

Posted by Arkansas Fuel Oil Corp.

(Effective Jan. 28, 1937)

Urania, La. $1.02

Posted by Continental Oil Co.

(Effective Oct. 11, 1938)

Tepetate and Ville Platte, La. $1.03

(Effective Jan. 1, 1939)

Abbeville, La.

Below 36	$0.92	38-38.9	$0.98
36-36.9	.94	39-39.9	1.00
37-37.9	.96	40 & above	1.02

Posted by Caddo Crude Oil Purchasing Corp.

(Effective April 19, 1939)

Allison area, Shreveport field $1.05

(Effective April 29, 1939)

Lisbon, N. La.

Below 34	$0.73	35 & above	$0.77
34-34.9	.75		

*Includes Bunkie, Caddo, Carterville, DeSoto, Homer, Haynesville, Rodessa, Sabine and Sarepta, in N. La.; El Dorado and Miller County, Ark. (latter is Ark. part of Rodessa field).

Note: S. O. Louisiana prices in all La.-Ark. fields, effective Oct. 5, 1938, are on 100% tank table basis.

†Includes Buckner, Magnolia, and Village pools.

‡Includes these fields: Baton Rouge, Bayou, Choctaw, Cheneyville, Darrow, Jeanerette, Lirette, N. Crowley and Roanoke.

Oct. 12, 1938, Magnolia Petroleum and The Texas Co. posted same gravity and price schedule as S. O. La. posts in N. La.-Ark. in these fields: Magnolia, in Bull Bayou, Cotton Valley, Haynesville, Pine Island and Rodessa, La., and Eldorado and Rainbow, Ark.; Texas Co. in N. La. Both also met S. O. La. in Smackover. Texas Co. posted $1.24 for Garden Island, La. and $1.04 for Lafitte, La.

***GULF COASTAL FIELDS**

Posted by Humble Oil & Refining Co.

†(Effective Oct. 11, 1938)

Below 20	$0.79	30-30.9	$1.08
20-20.9	.82	31-31.9	1.10
21-21.9	.85	32-32.9	1.12
22-22.9	.88	33-33.9	1.14
23-23.9	.91	34-34.9	1.16
24-24.9	.94	35-35.9	1.18
25-25.9	.97	36-36.9	1.20
26-26.9	1.00	37-37.9	1.22
27-27.9	1.02	38-38.9	1.24
28-28.9	1.04	39-39.9	1.26
29-29.9	1.06	40 & above	1.28

Polk County, Tex.

(Posted by Shell Oil Co., Inc.)

Livingston Area (Effective Oct. 11, '38) $1.10

Schwab Area (Effective Feb. 20, '39) 1.00

†Effective Dec. 3, 1938, gravities up to 45 & above discontinued in Refugio, Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

*Humble's prices apply in these Texas fields: Amelia, Clear Lake, Goose Creek, Mykawa, Sugarland, Thompsons, Webster and West Columbia; also Refugio, Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

Oct. 11, 1938, Stanolind posted in Clinton, Hastings, High Island, So. Houston, and Spindletop same prices as Humble in Texas Gulf Coast fields, except that Stanolind's lowest grade is below 21, at $0.82.

Oct. 12, 1938, The Texas Co. posted for Texas & La. Gulf Coast crude: $0.82 for below 21 plus 3c to 26-26.9, which is $1; from there on, 2c, to 34 & above, which is $1.16. In Refugio, same as other Gulf Coast, except highest gravity is 28 & above, $1.04.

Effective Oct. 11, 1938, Sinclair Prairie met Humble's Gulf Coast price & gravity schedule.

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co.

(Effective Oct. 11, 1938)

Salt Creek, (except Tensleep crude), Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma-Kansas, ranging from $0.86 to $1.10, which see under Mid-Continent crude on previous page.

Tensleep, Salt Creek field	$0.646
Iles, light, Col	0.98
Iles, heavy	0.92
Elk Basin, light	0.90
Grass Creek, light	0.90
Frannie light	0.55
Grass Creek, heavy	0.40
Hamilton Dome, Wyo	0.35
Frannie heavy	0.42

Posted by Ohio Oil Co.

(Effective Oct. 11, 1938)

Elk Basin, Wyo	$0.90
Grass Creek, light	0.90
Rock Creek	1.00
Lance Creek	0.77
Dry Creek, Mont	0.92

(Effective May 1, 1938)

Grass Creek, heavy $0.50

(Effective Nov. 16, 1937)

Sunburst, Mont $0.90

Posted by Continental Oil Co.

(Effective Oct. 11, 1938)

Cat Creek, Mont	$1.10
Big Muddy, Wyo	0.98
Lance Creek, Wyo	0.77

CALIFORNIA, *Posted by Standard Oil of California*

All gravities above those quoted take highest price offered in the field. Prices effective Feb. 26, 1936, except Huntington Beach, Playa del Rey, Santa Fe Springs, Kern Front, Signal Hill (Long Beach) effective March 7, 1936; Elk Hills effective June 22, 1936; Lakeview Area, Aug. 19, 1936; El Segundo and Wilmington, Oct. 15, 1937; Greeley-Canal, July 9, 1938; Santa Maria Valley, by Union Oil, Oct. 15, 1938.

Gravity	Signal Hill (Long Beach) El Segundo †Wilmington	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda Brea Canon	Athens Rosecrans	Dominguez	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	‡Newhall and others	Mountain View	Elk Hills	Buena Vista Hills Midway-Sunset Lakeview Area	Greeley-Canal (Kern County)	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria (Union Oil)
13-13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.63
14-14.9	$0.80	$0.79	$0.74	$0.78	$0.79	$0.80	$0.76	....	....	$0.80	$0.76	$0.76	$0.77	$0.78	....	$0.70	....	$0.70	$0.70	....	$0.70	$0.70	....	.65
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.68
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.70
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.70
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	.82	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	....
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	.85	.76	.78	.77	.78	....	.70	.70	.74	.74	....	.74	.71	.70	....
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	.88	.78	.82	.77	.80	....	....	.70	.78	.78	....	.78	.72	.70	....
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	.91	.80	.85	.77	.84	.78	....	.73	.82	.82	....	.82	.74	.70	....
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	.93	.84	.89	.79	.88	.78	....	.77	.87	.87	....	.86	.78	.72	....
23-23.9	.95	.86	.77	.96	.99	1.02	.96	.84	.79	.96	.88	.93	.82	.92	.78	....	.80	.92	.92	....	.90	.82	.76	....
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	.99	.91	.96	.85	.96	.82	....	.84	.97	.97	....	.94	.86	.79	....
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	1.02	.95	....	.89	.99	.86	....	.88	1.01	1.01	....	.98	.90	.83	....
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	1.05	.98	....	.92	1.03	.90	....	.91	1.06	1.06	....	1.02	....	....	....
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	1.02	....	.96	1.06	.95	....	.95	1.10	1.10	$0.91	1.06	....	....	....
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	1.06	....	.99	1.10	.99	....	.99	1.15	1.15	.94	1.10	....	....	....
29-29.9	1.17	1.15	.93	1.18	1.18	....	1.17	1.12	.93	....	1.09	....	1.03	1.14	1.03	....	1.02	1.20	1.20	.98	1.14	....	....	....
30-30.9	1.21	1.19	.95	1.22	1.21	....	1.21	1.17	.95	....	....	....	1.07	1.17	1.08	....	1.06	1.25	1.25	1.02	1.18	....	....	....
31-31.9	....	....	....	....	1.24	....	1.24	1.22	.97	....	....	....	1.11	1.21	1.12	....	1.09	1.29	1.29	1.06	....	....	....	....
32-32.9	....	*Ellwood Terrace	....	....	1.27	....	1.27	1.27	1.00	....	....	....	1.14	1.25	1.16	....	1.13	1.34	1.34	1.09	Kettleman Hills			
33-33.9	....	1.28	....	....	....	....	....	1.32	....	....	....	....	1.18	1.28	1.20	....	1.17	1.38	1.38	1.13	....	1.19	....	....
34-34.9	....	1.32	....	....	....	....	....	1.37	....	....	....	....	1.22	1.32	1.25	....	1.20	....	....	1.17	....	1.23	....	....
35-35.9	....	1.35	....	....	....	....	....	1.42	....	....	....	....	1.25	....	1.29	....	....	....	....	1.20	....	1.27	....	....
36-36.9	....	1.39	....	....	....	....	....	1.46	....	....	....	....	1.29	....	1.33	....	....	....	....	1.24	....	1.31	....	....
37-37.9	....	1.43	....	....	....	....	....	1.51	....	....	....	....	1.32	....	1.37	....	....	....	....	1.28	....	1.35	....	....
38-38.9	....	....	....	....	....	....	....	1.56	....	....	....	....	1.36	....	1.42	....	....	....	....	1.31	....	1.39	....	....
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40-40.9	....	....	....	....	....	....	....	1.66	....	....	....	....	1.43	....	....	....	....	....	....	1.39	....	....	....	....
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42-42.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.46	....	....	....	....
43-43.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.50	....	....	....	....
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46-46.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.61	....	....	....	....
47-47.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.65	....	....	....	....
48-48.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.68	....	....	....	....

F.O.B. Standard Pipe Line

*F. o. b. ship.

‡Also McKittrick, Kern River. Kern Front and Round Mountain $0.70 thru 19.9 gravity; no higher gravity quoted.

†Wilmington prices differ on gravities below 18.9. Prices are: 14-16.9, $0.75; 17-17.9, $0.77; and 18-18.9, $0.79; rest of schedule same as Signal Hill.

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TRADEMARKS

The following are trademark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Munsey Building, Washington, D. C., trademark specialists.

As an additional service feature to its readers, this journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering. You may communicate with the Editor of this Department, or send your inquiry direct to the National Trade-Mark Company, stating that you are a reader of this journal.

KEYSTONE. Ser. No. 409,098. Keystone Lubricating Co., Philadelphia. Filed July 30, 1938.
For telltale or indicating lubrication fittings.

SOLO. Ser. No. 413,609. U. S. Industrial Alcohol Co., New York, assignor to U. S. Industrial Chemicals, Inc., New York, a corporation of Dela. Filed Dec. 8, 1938.
For anti-freeze,

GULF. Ser. No. 412,550. Gulf Oil Corporation, Pittsburgh, Pa. Filed Nov. 9, 1938.
For electric-motor oil.

SUNNY STATE and representation of the sun. Ser. No. 414,758. Sunny State Oil Products Co., Albuquerque, N. Mex. Filed Jan. 12, 1939.
For fuel oil for motors.

BOCO. Ser. No. 409,342. Bostick Brothers, Benoit, Miss. Filed Aug. 8, 1938.
For butane and liquefied gas.

TURBIFIER. Ser. No. 413,153. Smith Separator Corporation, Tulsa, Okla. Filed Nov. 25, 1938.
For turbulence rectifiers for preventing turbulence in fluids entering an oil and gas separator or the like.

Pickets Help Station's Trade

GUTHRIE, Okla.—Joe Paul and Andy Carmichael, service station operators here, turned to advantage notoriety caused by pickets who besieged their station with signs—"Midcontinent Oil Corp. unfair to Oil Workers Union."

These enterprising operators hung a large sign in front of their station with the following caption—"Watch the Marathon—Prize to the Winner." Marching tunes and loud speakers resulted in widespread attention to the station pickets and resulted in doubling the business at the station.

CLASSIFIED

Position Wanted

LUBRICATING OIL SALES EXECUTIVE

Executive of recognized oil sales ability desires connection as division manager in locality where large industrial market exists. Will bring to employer a rich background of experience and acquaintance in the petroleum and allied industry.

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FOR SALE

FIVE ACRES LAND SUITABLE bulk oil station. Private railroad siding across center of property. Concrete office and large garage. Three heavy sheet metal warehouse buildings. Located industrial city of 10,000 in prosperous farming community.

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Miscellaneous

WHAT IT COSTS

"For Sale," "Wanted to Buy," "Help Wanted," "Business Opportunities," "Miscellaneous" classifications, set in type this size without border — 10 cents a word. Minimum charge, $3.00.

"Position Wanted"—5 cents a word. Minimum charge $1.00.

Advertisements set in special type or with border—$4.00 per column inch.

Copy must reach us not later than Saturday preceding date of issue.

All advertisements carried on this page are payable in advance.

"STRICTLY PERSONAL"

William L. Ashby, formerly aviation representative of Tide Water Associated Oil Co. and later president of Consumers Oil Co., has been made head of sales promotion for the Coastal Oil Co., Port Newark, N. J.

* * *

W. H. Knapp, formerly of Des Moines, has been transferred to Wichita, Kan., as city salesman for the Skelly Oil Co.

* * *

J. E. Vilm, who has been engaged in the oil business in Kansas for several years, has become Globe Oil & Refining Co.'s representative in western Kansas.

* * *

R. E. Cowan, purchasing agent for the Derby Oil Corp., has been named president of the Highway Association K96, while **H. V. Mering,** Great Bend, Kan. jobber, and **W. W. Fowler,** Augusta, Kan., service station operator, have been named directors.

* * *

Ben H. Johnson, oil marketer at Talmo, Kan., has been named state business manager for Kansas, effective May 15.

* * *

R. P. Baker, Pure Oil Co. marketing executive, recently left for a month's vacation in Europe. Mr. Baker was accompanied by his wife.

* * *

A. H. Worrall, assistant manager of the Fargo, N. D., sales division for Standard of Indiana has been made manager at Saginaw, Mich. **E. J. Stivers,** sales promoter in the general offices at Chicago, succeeds Worrall at Fargo. **E. R. Soop,** manager at Saginaw, has been transferred to assistant wholesale manager at Grand Rapids, succeeding **L. D. Hyde,** transferred to other duties.

* * *

R. A. Menking, formerly with L. L. Coryell & Son, is now with the James Oil Co., at Fremont, Nebraska.

* * *

The Mid-Continent section of the American Institute of Mining and Metallurgical Engineers last week honored at a special meeting President **Donald B. Gillies** of the national organization. Gillies, vice president of Republic Steel Co., Cleveland, is making a tour of the organization's section. He is accompanied by **Daniel C. Jackling,** a past president of the organization; **A. B. Parsons,** national secretary, and **Chester Naramore,** assistant secretary.

* * *

Clyde E. Halloren, El Dorado, Kan., engineer for the Gas Service Co., has won first prize in the national essay contest sponsored by the American Gas Assn. with his paper on "The Duties of a Local Manager."

* * *

President **L. B. Simmons** and Secretary **John C. Day** of the Western Petroleum Refiners Assn. spent last week visiting member companies in Texas, Arkansas, Louisiana prior to attending the mid-year meeting of the American Petroleum Institute in New Orleans, La., this week.

* * *

Miss Mary Sue Collins, treasurer of the Western Petroleum Refiners Assn., has been granted a three-months leave of absence and has gone to her former home in Texas for a few days before going on to New York for an extended visit.

* * *

Dr. John E. Snodgrass, assistant medical director of Standard of New Jersey and subsidiary companies, has retired after seventeen years service with the company.

* * *

F. H. Lerch, Jr., head of the natural gas department of Standard Oil Co. of New Jersey, succeeds **Howell C. Cooper,** retired, as president of the Colorado Interstate Gas Co., the Mississippi River Fuel Co. and the Hope Producing Co. **L. L. Tonkin,** vice-president and chief engineer, succeeds Cooper as president of the Hope Natural Gas Co. and the Hope Construction & Refining Co. **H. B. Schum,** assistant treasurer of Hope, replaces Cooper as president of the River Gas Co. and **Oscar C. Gericke,** vice-president of the Domestic Coke Corp., has been promoted to the presidency of that concern.

* * *

Florida was the favorite winter vacation ground for Ohio jobbers this year, with the following spending some time there during the off-season: **George T. Farrall,** Midway Oil Co., East Liverpool; **H. P. Legg,** Legg & Davis Coal Co., Columbus; **J. R. McElroy,** Seneca Oil Co., Fostoria; **B. W. Miller,** Miller Oil Co., Columbus; **H. S. Palmer,** Liberty Bell Oil Co., Wooster; **Harry Stenson,** Port Clinton; **R. W. Tresler,** Tresler Oil Co., Cincinnati; **Roy B. Weed,** Wholesale Gasoline Corp., Columbus and **Eric V. Weber,** Eureka Oil Co., Cincinnati.

Jesse L. Digar, Penn-Zane Co., Zanesville took in California and Florida, while **John Stevens,** John Stevens Oil, Co., Genoa, spent time in Haiti and Florida.

John J. Klay, Parks-Klay Co., Lima, vacationed in California and **Fred Winland,** Winland Oil Co., East Liverpool, went on a western trip. **W. H. Bridges,** Eagleroc Oil Co., Youngstown went to Texas and **Dennis G. Rice,** Rice Oil Co., Johnstown, spent several weeks in Mexico.

* * *

D. R. Knowlton

J. G. McLeod, export manager of The Texas Co. (California), recently left Los Angeles for the east where he will visit Texaco headquarters and will take in the New York World's Fair.

* * *

H. E. Zoller of Wichita, Kan., has been made executive vice president and general manager of the Derby Oil Co. at Wichita, effective June 1. He will take over the duties of **A. L. Derby,** founder of the company, who will continue to be chairman of the board and chairman of the executive committee. Zoller leaves the Shell Oil Co., Inc., to accept the new position.

* * *

Sidney E. Smith, secretary-treasurer, **R. E. Greiss,** sales manager, and **O. P. Schafer,** purchasing agent, of **L. L. Coryell & Son,** Lincoln, Nebr., were in Chicago last week attending a convention.

* * *

J. A. Snider of Aetna Oil Service Co. topped bowlers with a season average of 185 in the Louisville Oil Men's Bowling League. **M. A. Bauer** of Continental Oil Co., independent oil jobbing company at Louisville, rolled the season high game of 267. **Joe Hines** of Gulf Oil Corp. scored the high series, rolling 622.

* * *

D. R. Knowlton has been made general production superintendent for Phillips Petroleum Co. **J. S. Montgomery** and **P. C. Murphy** have been made regional general superintendents of Phillips production, which has been divided into two areas. Montgomery will head Indiana, Illinois, Kentucky, Kansas, Oklahoma and Texas, except the Gulf Coast, while Murphy heads operations in the Texas Gulf, Louisiana, Mississippi and Arkansas.

W. J. Crites, chief production engineer, has been appointed research engineer. **O. L. Carlson,** assistant chief production engineer, has been advanced to chief engineer.

IT'S A BIG JOB...

YES, IT'S A BIG JOB—convincing automobile owners that they should buy a good grade of gasoline from you. You can't do it alone. Neither can we. But by pulling together we can prove to more and more people that good gasoline gives a plus to car performance.

First, let's talk the same language. Here are the basic facts:

The performance and the economy of a modern high compression engine improve as the spark is advanced toward the point of "maximum performance."

But the tune-up man cannot advance the spark farther than the anti-knock quality of the gasoline permits. If he does, a "knock" or "ping" develops that wastes fuels and power just as surely as a *retarded* spark.

Because there are different grades of gasoline, cars have different grades of performance, depending on the fuel used and the spark setting (as shown on the chart at the right).

Tell your customers these facts and remember you're being backed to the limit. How? By a big-league radio show..."Tune-up Time." By striking color advertisements in important national magazines. By the famous Ethyl Motor Clinics that today are proving to thousands of motor service men that *"The better the gasoline, the better the tune-up."*

YOUR CUSTOMERS HAVE THESE 3 CHOICES

BEST PERFORMANCE—with gasoline marked "Ethyl" on the pump or globe. It is highest in anti-knock and all-round quality. Contains enough tetraethyl lead so that the engine's spark can be *advanced* closest to the point of maximum power and economy without "knock" or "ping."

GOOD PERFORMANCE—with "regular" gasoline, which permits the spark to be considerably advanced without "knock" or "ping." Most "regular" gasolines now contain tetraethyl lead, as shown by the "Lead" signs on the pumps.

POOR PERFORMANCE—with low-grade gasoline, poor in anti-knock quality. With low-grade gasoline in a modern car, the engine's spark must be *retarded*—which means *loss* of power and economy.

TUNE IN AND CASH IN ON "TUNE-UP TIME." *We're telling the facts about first-grade performance every Thursday evening on the coast-to-coast Columbia Broadcasting network. Time, 9 P. M., E. S. T. (10 P. M. Daylight Time.)*

ETHYL GASOLINE CORPORATION, *manufacturer of anti-knock fluids used by oil companies to improve gasoline*

L. L. Aubert

Although comparatively young in years, L. L. Aubert, new president of the Oil Producers Agency of California, has a broad background in the industry. He is a "native son," born in San Francisco, April 25, 1898.

Graduated from Stanford University in 1921, Aubert went into California oil fields, working for General Petroleum Corp. in the drilling, producing and refining departments. In 1927, he resigned to become general manager of Bankline Oil Co. and The Norwalk Co.

In 1937, he was chairman of the Pacific Coast District, production division, of the American Petroleum Institute and now is chairman of the advisory committee.

He is now serving his third year as chairman of the Allocation Committee of the Central Committee of California oil producers. One of the original organizers of the California Petroleum Safety Board, he is now vice-president. He is also active in the California Natural Gasoline Ass'n. of which he is a director.